



Era Aviation, Inc.

PROCESS SPECIFICATION

ERA AVIATION INC.

GULF COAST DIVISION
LAKE CHARLES, LOUISIANA

PROCESS SPECIFICATION NO. 4009
APPLICATION OF URETHANE PAINT
FOR FINISH COAT

	<u>DATE</u>
Prepared By: <u>Dave Murphy</u>	<u>5/10/90</u>
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ERA P S 4009

REV IR

DATE 5/15/90

1. SCOPE

This specification establishes the procedures for application of urethane paint finish to composite material.

2. MATERIALS

- 2.1 U.S. Paint (alumigrip) 831 South 21st Street
2 part system consisting of: St. Louis, Missouri 63103-3092
Top coat base
AWL-CAT #2 Converter G3010
Reducer T0001 Temp. below 77 deg. F
Reducer T0003 Temp. above 77 deg. F.
- 2.2 Tempo 4600 durathane high gloss enamel
2 part system consisting of:
4600 base
4600 catalyst

Reducer - 4600-S-1 as required
or thinner conforming to MIL T 81772.
- 2.3 Dupont (Imron)
2 part system consisting of: E.I. Dupont De Nemours & CO
Imron base color 8125 Kempwood Dr.
Activator 192-S Houston, Texas 77255-5404
Reducer 8485-S

3. PREPARATION

CAUTION - AVOID BREATHING VAPORS AND USE IN A WELL VENTILATED AREA. AVOID REPEATED CONTACT WITH SKIN. OBSERVE ALL PRECAUTIONS AND WARNINGS SHOWN ON MANUFACTURER'S LABEL AND MATERIAL SAFETY DATA SHEET. (SEE APPENDIX B)

- 3.1 Prepare surface to be painted by wiping clean with a tack rag.
- 3.2 Mask areas to be painted as required by applicable drawing, E.O., etc.
- 3.3 Prepare paint in accordance with manufacturer's recommendations. (See Appendix A)

4. APPLICATION

- 4.1 Apply paint to composite component in accordance with technical data sheets shown in Appendix "A".

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4.2 Observe drying times and time between coats. See Technical Data Sheet. (Appendix A).

5. REQUIREMENTS

- 5.1 Uniform covering of material; free of runs and sags.
- 5.2 Minimum dry film thickness per manufacturer's specifications. See Appendix A.
- 5.3 Dry film thickness test can be accomplished by using aluminum foil in area to be masked. Lay down a strip of foil, and add 1/2 of another strip of foil, from the same roll, on top of previous layer. After paint has dried the two foils may be separated and measured to provide a gage for mil thickness requirements.
- 5.4 After system has dried 24 hours check adhesion using pressure sensitive tape at random locations.

ERA P S 4009REV IRDATE 5/15/90**APPENDIX A**

Manufacturer's Data Sheets for:

U.S. Paint - Alumigrip
Tempo Paint - 4600 Series
DuPont - Imron



831 South 21st Street
St. Louis, Missouri
63103-3092

AWLGRIP™
Two Package Linear Aliphatic Urethane Topcoat

Induction Time After Mixing: 15 minutes

Anticipated Pot Life @ Standard Conditions:
12-16 hours

Anticipated Cure Time @ Standard Conditions:
24 hours to tape free; 7 days to full cure

Anticipated Cure Time When Accelerated

Temp. (°F)	Reducer	Accelerator	Dry Time (Hrs.)	Application Life (Hrs.)
100	T0002	None	18-20	6-8
90	T0003	X-138*	3-4	2-3
		X-98**	1-2	1-2
80	T0003	X-138	4-5	4-5
		X-98	2-3	1-2
70	T0003	X-138	11-12	6-7
		X-98	4-5	2-3
60	T0003	X-138	12+	6-7
		X-98	6-7	3-4

*X-138: 1 liquid ounce per 2 gallons of catalyzed AWLGRIP® before adding reducer.
**X-98: 1/2 liquid ounce per 2 gallons of catalyzed AWLGRIP® before adding reducer.

Application Temperature Limits: Temperature should be between 60°F. and 90°F. during application. Lower temperatures will retard curing.

Service Temperature Limits: 150°F. continuous; 225°F. intermittent. Higher temperatures may cause yellowing.

Mixing Ratio by Volume:

SPRAY

Mix one part AWLGRIP® Topcoat Base with one part AWL-CAT #2 Converter G3010. Reduce to spray viscosity 17-20 secs. in a #2 Zahn Cup @ 77°F., 50% R.H. with T0003 or T0001. Temperatures above 77°F. require reduction of 20-25% with T0003 Reducer. Temperatures below 77°F. require reduction of 20-25% with T0001.

Recommended Film Thickness:

5 Mills Wet

2-3 Mills Dry

Theoretical Coverage (Sq. Ft./Gal.):

690 Square Feet @ 1 Mil Dry

225 Square feet @ recommended film thickness per mixed gal.

SILKSCREEN

Mix 4 fl. oz. (1/2 c.) M3043 SMOOTH-SILKTM with 1 gal. AWLGRIP® Topcoat Base. Mix two parts of SMOOTH-SILK modified AWLGRIP® Topcoat Base with 1 part AWL-CATM #3 Converter H3002.

Recommended Film Thickness:

3 Mills Wet

1-1 1/2 Mills Dry

Theoretical Coverage (Sq. Ft./Gal.):

900-950 Square Feet @ 1 Mil Dry

400 Square Feet @ recommended film thickness per mixed gal.

BRUSH

Mix two parts AWLGRIP Topcoat Base with one part AWL-CAT #3 Converter H3002. Reduce to brush viscosity with up to 20% AWLGRIP® Reducer T0031.

Film Thickness/Coverage: Same as SILKSCREEN.

Surface Preparation

Surfaces should be clean, dry and free from all contaminants. Exact surface preparation requirements are dependent upon the type of primer used.

Suggested Primer Systems

AWL-QUIK™ #545 Epoxy Primer, 30-Y-94 Primer, or Hi-Build Epoxy Primer

Due to the chemical variations present in plastics, refer to the U.S. Paint Plastics Bulletin for detailed application procedures. Plastics covered in that bulletin include acrylic sheet, polycarbonate, polyethylene, ABS, ALUCOBOND, SMC, LUMIFLEX, polypropylene.

Application Instructions

CONVENTIONAL SPRAYING

Use Binks or its equivalent:

Pressure Pot System:

Model #62 spray gun

Fluid nozzle #63B

Fluid needle #363A

Air nozzle #63PB

Siphon or Cup Gun System:

Model #62 spray gun

Fluid nozzle #66

Fluid needle #365

Air nozzle #665H

Pressure pot gauge should read 8-12 pounds and 55 pound atomization at the gun.

AIRLESS SPRAYING

Use Binks or its equivalent:

Model #43 spray gun

9-1170 tip

Orifice Size .009-.011

Spray angle of 70° or 8" fan

On a 25:1 pump, the pressure gauge should read 30-40 pounds.

SILKSCREEN

CAUTION! Test all screens for solvent resistance. The solvent base of AWLGRIP® will attack certain screen materials.

If silkscreening over clear acrylic sheet, PLASTIGRIP additive may be required. Refer to U.S.P. Plastics Bulletin.

Apply AWLGRIP® in the same manner as traditional silkscreen inks.

BRUSH

The most successful field technique is to work two painters simultaneously, shoulder to shoulder. One rolls the topcoat to a film thickness of two-three mils wet (1.0 mils dry) with a short nap (1/2" or less) mohair or urethane grade foam roller. The other applicator feathers the rolled topcoat brushing vertically.

When brushing the AWLGRIP® Coatings Systems the following technique can help protect your fine badger brushes and provide the smoothest application:

1. Brush all surfaces whenever possible vertically. Vertical brushing minimizes the residual brush marks and aids in the cleaning of the finished surface.
2. Two brushes should be used simultaneously during application. The second brush should be placed in a container of Brushing Reducer T0031 when not in use.

3. After applying AWLGRIP® for approximately 30 minutes, the first brush being used should be thoroughly cleaned and placed in the container of Brushing Reducer T0031.
4. The second brush should be removed from the solvent, dried, and used to continue the AWLGRIP® coatings application.
5. Constantly change, clean, and dry alternating brushes to prevent the curing of the AWLGRIP® Coatings Systems in the heel of the brush.
6. For optimum results, AWLGRIP® urethanes should be brushed using the techniques employed when varnishing. Always start from the dry surface and brush into the wet edge.

PROBLEM SOLVING ADDITIVES:

Accelerators (73015)X-138,
(73014)X-98
Anti-Crater Solution G3002
CRATER-XTM M1017
Flattening Agent G3013
GRIPTEXTM Non-Skid Particles Fine 73012
Coarse 73013
PLASTIGRIP™ Adhesion Promoter M3054
SMOOTH-SILK™ Silkscreening Agent M3043
SPATTER—IT™ Texturing Additive M3048

Recoatability—Normal

Can be recoated without sanding within 36 hours. If recoat takes more than 36 hours, sand lightly with 280 to 320 grit production paper or use SCOTCHBRITE® between coats. Clean with AWL-PREP™ after sanding.

Recoatability—Accelerated

Can be recoated without sanding between 18-36 hours. If recoat takes more than 36 hours, sand lightly with 280-320 grit production paper or use SCOTCHBRITE® between coats. Clean with AWL-PREP™ after sanding.

Equipment Cleaning

Clean spray equipment, brush or roller with Reducer T0003, T0001, T0031, or T0002.

Safety*

CONTAINS ALIPHATIC POLYISOCYANATE
DANGER!
VAPOR AND SPRAY MIST HARMFUL
MAY CAUSE LUNG IRRITATION AND ALLERGIC
RESPIRATORY REACTION
IRRITATES SKIN AND EYES
FLAMMABLE

Gives off harmful vapor of solvents and isocyanates (a hazardous material). DO NOT USE IF YOU HAVE CHRONIC (LONG-TERM) LUNG OR BREATHING PROBLEMS, OR IF YOU HAVE EVER HAD A REACTION TO ISOCYANATES. USE ONLY WITH ADEQUATE VENTILATION. WHERE OVERSPRAY IS PRESENT, A POSITIVE PRESSURE AIR SUPPLIED RESPIRATOR (TC19C NIOSH/MSHA) IS REQUIRED WITH APPROVED AIR SUPPLY.

Follow directions for respirator use. Wear the respirator for the whole time of spraying and until all vapors and mists are gone. Wear eye protection and impervious clothing and equipment. Exposure controls may require the use of a NIOSH/MSHA approved combination vapor/particulate or air supplied respirator.

Do not breathe vapor or spray mist. Do not get in eyes or on skin. Keep away from heat (sparks) and open flame. Keep closures tight and upright to prevent leakage. Keep container closed when not in use. In case of spillage, absorb and then dispose of in accordance with local applicable regulations.

For Professional Use Only

FIRST AID: If affected by inhalation of vapor or spray mist, remove to fresh air. If breathing difficulty persists or occurs later, consult a physician and have label information available. In case of eye contact, flush immediately with plenty of water for 15 minutes; call a physician. In case of skin contact, wash thoroughly with soap and water.

*WARNING!

If specific color contains lead as indicated on its label, DO NOT USE ON TOYS, FURNITURE, OR SURFACES OR OTHER ARTICLES WHICH MIGHT BE CHEWED BY CHILDREN. WASH HANDS THOROUGHLY AFTER USING AND BEFORE SMOKING OR EATING.

IMPORTANT! This product must be blended with other products prior to use. Read all warnings and precautions on the labels of all products being blended as the combination may contain the hazards of each component.



PAINT AND VARNISH CO.

DIVISION OF TOWER CHEMICALS LIMITED

PAINTS • VARNISHES • PUTTIES • LACQUERS • AIRCRAFT AND INDUSTRIAL FINISHES
205 FENMAR DRIVE • WESTON, ONTARIO M9L 2X4 • 746-2233

Specification Data

4600-Durathane High Gloss Enamel consists of:--
4600-Durathane Base and 4600-Durathane Catalyst

DESCRIPTION: Gloss, hard, weather and chemical resistant aliphatic polyurethane.

COLOUR: As specified.

APPLICATION LIFE: 8 hours at 77°F at approximately 50% relative humidity.

MIXING RATIO: 1 part Base with 1 part Catalyst by volume.

REDUCING THINNER: 4600-S-1 as required. *& MILT 8,772.*

SPRAY VISCOSITY: 19-21 Seconds, #2 Zahn cup.

INDUCTION TIME: 15-30 Minutes.

RECOMMENDED
FILM THICKNESS: 1.5 to 2.0 mils dry.

DRY: To tape 12 hours at 77°F at approximately 50% relative humidity.

APPLICATION: Apply a light coat followed by a full wet coat to give a wet film thickness of 3-4 mils. May be applied by airless or conventional spray equipment.

DURATHANE 4600-C-1 GLOSS CATALYST

CATALYST IS SENSITIVE TO MOISTURE AND MUST BE KEPT IN TIGHTLY CLOSED CONTAINERS. IF CATALYST TAKES ON A MILKY CAST IT SHOULD NOT BE USED AND SHOULD BE DISCARDED. EACH COLOUR IN THE DURATHANE 4600 LINE HAS ITS OWN CATALYST. I.E. BLACK CATALYST SHOULD NOT BE USED WITH WHITE BASE.

The information presented herein, while not guaranteed, is to the best of our knowledge true and accurate. No warranty of guarantee express or implied is made regarding the performance of any product, since the manner of use is beyond our control. No suggestion for product uses, nor anything contained herein, shall be construed as a recommendation for its use in infringement of any existing patent, and Tempo assumes no responsibility or liability for operations that do infringe any such patents.

09 19 00 05.19 0719 401 0705 00001 0001 000
"IMRON" POLYURETHANE ENAMEL

Imron
180-200 degrees

CODES AND COLORS:

MIXING MACHINE FORMULATED COLORS TO MATCH A WIDE VARIETY OF VEHICLES; COMMERCIAL, AVIATION, MARINE AND FLEET COLORS.

USAGE AND SUBSTRATES:

"IMRON" CAN BE USED OVER ANY PROPERLY PREPARED SUBSTRATE, SUCH AS FIBERGLASS, GEL-COAT, STEEL, ALUMINUM AND GALVANIZED. "IMRON" CAN BE USED OVER ALL O.E.M. ENAMEL FINISHED VEHICLES OR OVER "IMRON" ITSELF.

PRIMERS: "CORLAR" EPOXY PRIMER AND MULTI-PURPOSE PRIMERS ONLY.

APPLICATION:

- ACTIVATION: THREE PARTS "IMRON" TO ONE PART 192-S ACTIVATOR (NOT OPTIONAL).
POT LIFE - 6 TO 8 HOURS.
- REDUCTION: UNDER NORMAL CONDITIONS, NO REDUCTION IS REQUIRED. IF RETARDER IS NECESSARY, USE 8485-S UP TO 15% BY VOLUME.
- VISCOSITY: 18 TO 22 SEC. (DU PONT M-50 VISCOSITY CUP).
- SOLVENTS: 8485-S "IMRON" REDUCER TO INCREASE FLOW AND LEVELING.
- ACCELERATOR: 189-S (OPTIONAL) WILL REDUCE TO TAPE CURE TIME PROVIDING A HARDER FILM SOONER.
(4 OUNCES TO ONE GALLON OF "IMRON")
- AIR PRESSURE: SOLID COLORS - 50-60 P.S.I. "AT THE GUN"
METALLIC COLORS - 60-65 P.S.I. "AT THE GUN"
- GUN DISTANCE: 8 TO 10 INCHES.
- COATS: TWO COATS (SOLIDS)
THREE TO FOUR COATS (METALLICS), OR MORE AS REQUIRED.
- DRYING TIMES: DUST FREE - 15 TO 30 MINUTES
HAND DRY - 2 TO 3 HOURS WITH 189-S
- TOPCOATS: 500-S "IMRON" CLEAR ENAMEL.
- SPECIAL FEE: 259-S ONLY

LIMITATIONS:

- DO NOT USE "IMRON" OVER O.E.M. LACQUER OR AIR DRY REFINISH LACQUER PRODUCTS.
- CLEAN ALL EQUIPMENT AS SOON AS POSSIBLE AFTER APPLICATION IS COMPLETED.

(SEE LABEL FOR ADDITIONAL PRODUCT INFORMATION AND SAFETY PRECAUTIONS)



IMRON[™] POLYURETHANE ENAMEL

USE: A high-gloss, extremely durable, chemical and solvent-resistant, air-dry material both in solid and metallic colors for use on aircraft, commercial vehicles, fleets, passenger cars and other applications where exposure to severe conditions exists.

DESCRIPTION: A multi-component product consisting of a pigmented base and activator. Companion products are an optional Dry Time Accelerator 189 S, 259 S Imron[™] Additive for fish-eyes and 8485 S Imron[™] Reducer.

PERFORMANCE DATA: Excellent color and gloss retention, chip resistance, abrasion resistance, stain and mar resistance. Excellent chemical and solvent resistance. Outstanding resistance to yellowing. Excellent cleanability. Optional faster drying rate.

% SOLIDS BY WEIGHT: 47.5% as mixed. (This is an average value which will vary with color selected.)

% SOLIDS BY VOLUME: 34.0% as mixed. (This is an average value which will vary with color selected.)

DRYING RATE: Tape free: @ 77°F., 50% Rel. Humidity: 6-10 hours without accelerator. 2-4 hours with accelerator.

THEORETICAL COVERAGE: 544 sq. ft. at 1 mil. (This is an average value which will vary with color selected.)

RECOMMENDED FILM THICKNESS: 1.8 to 2.2 mils dry film thickness.

POT LIFE: 8 hours minimum at 70-75°F.

FLASH POINT: Below 80°F.

DIELECTRIC STRENGTH: Approximately 2 kilovolts per mil over steel, 8 kilovolts per mil over fiberglass for solid colors. Metallics have much lower values.

REDUCTION RATIO: Mix three parts IMRON Polyurethane Enamel with 1 part 192 S Activator. Four ounces per gallon 189 S Accelerator can be added to increase drying rate. 1/4 to two oz/gallon of 259 S Imron[™] Additive should be added to prevent fish-eyes. For spraying of large areas material may be reduced further with 8485 S Imron[™] Reducer or 8100 S Retarder.

APPLICATION:

For complete details refer to Imron[™] Application Brochure, E-28268.

1. Treat bare metal with Du Pont's recommended metal treatment system. Bare fiberglass should be scuff-sanded and solvent wiped with 3812 S Enamel Reducer.
2. Follow with CORLAR[™] Epoxy Primer. For aluminum, magnesium or fiberglass substrates use 824S light gray or 825S red oxide. For steel surfaces, use 825S red oxide. (CORLAR[™] must be activated with 826S). Multi-Purpose Primer 100 S/110 S may be used as a repair primer under IMRON on previously painted surfaces.

3. OEM finishes (except lacquers) and aged alkyd or acrylic enamels should be cleaned with 3919 S PREP-SOL[™] or 3929 S PREP-SOL II[™] and sanded thoroughly with #360 wet or dry sandpaper. Small bare areas can be primed with Multi-Purpose primer surfacer.
4. For solid colors spray a medium first coat. Allow to tack up and follow with full second coat.
5. For metallic colors apply a light medium coat as a tack coat. Allow to set up 20 minutes, then apply a second light medium coat. Then reduce 15% with 8485 S (17-18 seconds #2 Zahn Cup) and apply third light medium coat. If desired, another light medium coat of reduced material may be used.
6. Both solid and metallic colors can be clear coated with Imron[™] 500 S Clear.

RECOMMENDED SPRAY EQUIP.:

Type	Brand	Model #	Fluid & Air Nozzles	Needle	Retaining Ring
Siphon	Binks	= 7"	36 x 36 SD	33	
	Devilbiss	MBC510*	30	EX	
Pressure	Binks	= 7"	33B x 33P	33	54-704
	Devilbiss	MBC510*	704	FX	MBC368
Airless	Nordsen	Versagun*		06G11	
*for equivalent				(.015 Restrictor)	

(over)

RECOMMENDED AIR PRESSURE:

Type	Pressure at Gun	Pot Pressure
Siphon	50-55 lbs. for solids 60-65 lbs. for metallics	
Pressure	60-70 lbs.	10-15 lbs.
Airless		2000 psi

RECOMMENDED SPRAYING VISCOSITY:

20-22 secs. \approx 2 Zahn Cup for solid colors.

17-19 secs. \approx 2 Zahn Cup for metallic colors.

SAFETY PRECAUTIONS: WARNING!

FLAMMABLE. BREATHING OF VAPOR MAY CAUSE IRRITATION. CONTAINS LEAD. DRIED FILM OF THIS PAINT MAY BE HARMFUL IF EATEN OR CHEWED.

Contains ester solvents.

Keep away from heat, sparks and open flame. Avoid prolonged or repeated breathing of vapor or spray mist and contact with eyes and skin. Keep container closed when not in use.

FIRST AID: In case of skin contact, flush with plenty of water; for eyes, flush with plenty of water for 15 minutes and get medical attention. If affected by inhalation of vapor, remove to fresh air. If swallowed, **CALL A PHYSICIAN IMMEDIATELY.** Induce vomiting.

KEEP OUT OF THE REACH OF CHILDREN. USE ONLY WITH ADEQUATE VENTILATION.

Do not apply on toys and other children's articles, furniture, or interior surfaces of any dwelling or facility which may be occupied or used by children. Do not apply on those exterior surfaces of dwelling units, such as window sills, porches, stairs, or railings, to which children may be commonly exposed.

IMPORTANT: WHEN MIXED WITH 192 S, MIXTURE WILL HAVE HAZARDS OF BOTH COMPONENTS. OBSERVE ALL APPLICABLE PRECAUTIONS.

DANGER!

**VAPOR AND SPRAY MIST HARMFUL
MAY CAUSE LUNG IRRITATION AND ALLERGIC RESPIRATORY REACTION.**

MAY IRRITATE SKIN AND EYES.

FLAMMABLE.

HARMFUL OR FATAL IF SWALLOWED.

Contains aliphatic polyisocyanates and ester solvents.

Use only with adequate ventilation.

If engineering and administrative controls of air contaminants are not feasible, wear an air line respirator (TC-19C NIOSH/MESA, or equivalent) during application and until work area has been exhausted of all vapor and spray mist. If air line respirators are not feasible and the atmospheric concentration of monomeric isocyanates is less than 10 times the allowable time weighted average, wear a vapor/particulate respirator (TC-23C NIOSH/MESA, or equivalent) recommended by the manufacturer for use with isocyanate vapors and mists. Individuals with chronic respiratory problems or prior allergic respiratory reaction to isocyanates must not be exposed to vapors or spray mist containing isocyanates.

Avoid breathing vapor or spray mist. Avoid contact with eyes and skin. Keep away from heat, sparks and open flame. Keep container closed when not in use. Do not transfer contents to bottles or other unlabeled containers.

FIRST AID: If affected by inhalation of vapor or spray mist, remove to fresh air. If breathing difficulty persists, or occurs later, consult a physician. In case of skin contact, wash thoroughly with soap and water; for eyes, flush immediately with plenty of water for at least 15 minutes and call a physician. If swallowed, **CALL A PHYSICIAN IMMEDIATELY.** Induce vomiting.

IN CASE OF: FIRE—Use water spray, foam, dry chemical or CO₂. **SPILL**—Absorb and dispose of in accordance with local regulations.

KEEP OUT OF REACH OF CHILDREN.

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REV IR

DATE 5/15/90.

APPENDIX B

Material Safety Data Sheets for:

U.S. Paint - Alumigrip
Top Coat Base
AWL-CAT #2 Converter G3010
T0001 Reducer
T0003 Reducer

Tempo 4600 Series
4600 Durathane Base
4600 Catalyst
4600 S-1 Reducer

Imron
Imron Base Color
192-S Activator
8485-S Reducer

MATERIAL SAFETY DATA SHEET

FOR COATINGS, RESINS, AND RELATED MATERIALS

DATE OF PREPARATION — 10-31-1985 R. 07-14-86

SECTION I

MANUFACTURER U. S. PAINT
DIVISION OF GROW GROUP, INCORPORATED
831 S. 21st Street
St. Louis, Missouri 63103

INFORMATION (314) 621-0525

EMERGENCY (314) 621-0525

PRODUCT CLASS MODIFIED ACRYLIC RESIN

TRADE NAME FOXFIRE® BRIGHT ALUMINUM METALLIC URETHANE TOPCOAT

CODE F1037

SECTION II — HAZARDOUS INGREDIENTS

INGREDIENT (COMMON NAME) (CHEMICAL NAME)	WEIGHT %	ACGIH TLV (PPM)	OSHA PEL (PPM)	VAPOR PRESSURE (mm Hg)
CELLOSOLVE ACETATE	23	5	100	1
2-ETHOXYETHYLETHANOLATE				
XYLENE				
DIMETHYL BENZENE	1	100	100	10
NORMAL BUTYL ACETATE				
BUTYL ETHANOLATE	12	150	150	10
PETROLEUM DISTILLATES				
ODORLESS MINERAL SPIRITS	3	100	500	2
ETHYL ACETATE				
ETHYL ETHANOLATE	4	400	400	86
TOLUENE				
METHYL BENZENE	1	100	200	23
PETROLEUM DISTILLATES				
ALIPHATIC HYDROCARBONS	5	100	NA	110

* Values given are in mg/M³.

NA — Not available

NE — Not established

Care should be taken when sanding pigmented paints.
Airborne nuisance particulates have an ACGIH TLV of
total dust = 10 mg/M³.

This material does not contain intentionally added ingredients
which are based on compounds of antimony, arsenic, cadmium, lead,
mercury, selenium, or water soluble barium.

SECTION III — PHYSICAL DATA

WEIGHT PER GALLON 8.87 lbs.

VOLUME PERCENT VOLATILE 58

BOILING RANGE 165°F — 395°F

EVAPORATION RATE — Slower than Ether

VAPOR DENSITY — — — Heavier than Air

SECTION IV — FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE
VAPORS MAY CAUSE FLASH FIRE

FLASH POINT 24°F TCC

LEL 1.00

EXTINGUISHING MEDIA — Dry Chemical or Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS — Keep away from heat, sparks,
and flame. Do not smoke. Extinguish all pilot lights and turn
off all sources of ignition, including heaters, fans, and other
non-explosion-proof electrical equipment, during use and until
all vapors are gone. Vapors may ignite explosively. Vapors
may spread long distances and beyond closed doors. Prevent
build up of vapors by maintaining a continuous flow of fresh air.

SPECIAL FIRE FIGHTING PROCEDURES — Self contained breathing appara-
tus with a full facepiece operated in pressure-demand or other
positive pressure mode. In case of fire, use CO₂, Dry Chemical
Foam, or other approved method for treating a Class B fire.
Summon professional firefighters.

SECTION V — HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE (ACUTE)

EYES Can cause severe irritation, redness, tearing,
and blurred vision.

SKIN Prolonged or repeated contact can cause moderate
irritation, defatting, and dermatitis.

BREATHING Excessive inhalation of vapors can cause nasal
and respiratory irritation, dizziness, weakness,
fatigue, nausea, headache, possible unconscious-
ness, and even asphyxiation.

SWALLOWING INGESTION IS HARMFUL and can cause a burning
sensation, nausea, vomiting, and diarrhea.

ADDITIONAL EFFECTS OF OVEREXPOSURE (CHRONIC)

—Prolonged and repeated breathing of spray mist and/or sanding dust
over a period of years may cause diseases of the lungs.

—Can cause irritation to mucous membranes.

—Inhalation of concentrated vapors causes intoxication resembling that
from alcohol.

—Lassitude, loss of appetite, and a bad taste may be noted at high
concentrations.

—Ingestion may cause drowsiness and in severe cases pulmonary edema.

—Hemorrhages into various vital organs have been noted.

—Mild allergen.

—Narcotic effects have been noted.

—May cause injury to kidneys and liver.

tional overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

WARNING! Harmful or fatal if swallowed. Harmful if inhaled or absorbed through skin. Overexposure may cause blood disorders. Based on tests with laboratory animals, overexposure may cause reproductive disorders and birth defects.

PRIMARY ROUTE(S) OF ENTRY (X) SKIN (X) BREATHING (X) SWALLOWING

FIRST AID:

IN CASE OF SKIN CONTACT:

Wash area thoroughly with soap and water. Remove soiled clothing. Get medical assistance if irritation persists. Wash clothing before reuse.

IN CASE OF EYE CONTACT:

Flush with large amounts of water for at least 15 minutes. Get medical assistance.

IF SWALLOWED:

GET MEDICAL ATTENTION IMMEDIATELY.
DO NOT induce vomiting.
Aspiration of material into lungs can cause chemical pneumonitis which may be fatal.

IF INHALED:

If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, summon medical assistance immediately. If breathing ceases, restore using approved CPR techniques and summon medical help immediately.

SECTION VI — REACTIVITY DATA

HAZARDOUS POLYMERIZATION — Can not occur.

STABILITY — Stable.

MATERIALS TO AVOID

Excess heat and/or oxidizing materials.

In addition: Chlorosulfonic acid

HAZARDOUS DECOMPOSITION

May decompose into fumes containing carbon monoxide and carbon dioxide.

When heated to decomposition emits toxic fumes.

SECTION VII — SPILL OR LEAK PROCEDURES

SMALL SPILL: Absorb liquid on inert material such as paper, vermiculite, floor absorbent, and transfer to hood.

LARGE SPILL: Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, contain area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be absorbed with inert materials such as sand, clay, earth, or floor absorbent, and shoveled into containers with non-sparking tools.

If run-off occurs, notify the proper authorities as required that a spill has occurred.

WASTE DISPOSAL METHOD

Allow volatile portion to evaporate in hood being sure to allow sufficient time for vapors to completely clear hood duct work. Dispose of contaminated absorbent, container and unused contents in accordance with local, state, and federal regulations. Do not incinerate closed containers.

SECTION VIII — PROTECTIVE EQUIPMENT

VENTILATION/RESPIRATORY PROTECTION

Use only with adequate ventilation. Maintain continuous flow of fresh air. Do not breathe vapors, spray mists, or sanding dusts. Wear appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor, mist, and particulate levels are below applicable limits. Follow respirator manufacturer's directions for respirator use. Engineering or administrative controls should be implemented to reduce exposure. Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

PERSONAL PROTECTIVE EQUIPMENT

Do not get in eyes, on skin, or on clothing. Use solvent resistant safety eyewear with splash guards. Solvent impermeable gloves, clothing, and boots are recommended to prevent skin contact.

SECTION IX — SPECIAL PRECAUTIONS AND ADDITIONAL COMMENTS

Keep closure tight and upright to prevent leakage. Keep container closed when not in use. Do not store above 120°F. Do not transfer contents to bottles or other unlabeled containers.

Containers of this material may be hazardous when emptied because they retain product residues (vapor, liquid, and/or solid). All hazard precautions given in this data sheet must be observed.

IMPORTANT!!

This product may be blended with other products prior to use. Read all warnings and precautions on the labels of all products being blended as the combination may contain the hazards of each component.

NON-WARRANTY

The information presented herein, while not guaranteed, is to the best of our knowledge true and accurate. No warranty or guarantee expressed or implied is made regarding the performance of any product, since the manner of use is beyond our control. No suggestion for product use, nor anything contained herein, shall be construed as a recommendation for its use in infringement of any existing patent, and Grow Group assumes no responsibility or liability for operations that do infringe any such patents.

FOR INDUSTRIAL USE ONLY

By professional, trained personnel using proper equipment. Not intended for sale to, or use by, the general public.

MATERIAL SAFETY DATA SHEET

FOR COATINGS, RESINS, AND RELATED MATERIALS

DATE OF PREPARATION — 02-26-1990

SECTION I

MANUFACTURER U.S. PAINT CORPORATION

831 S. 21st Street

St. Louis, MO 63103

INFORMATION (314) 621-0525

EMERGENCY CHEMTREC --- 1-800-424-9300

PRODUCT CLASS MODIFIED POLYISOCYANATE RESIN

TRADE NAME TOPCOAT CONVERTER FOR SPRAY APPLICATION

CODE G3010 (92-C-39) AWL-CATE #2

SECTION II — HAZARDOUS INGREDIENTS

COMMON NAME	[CHEMICAL NAME]	[CAS #]
DIETHYLENE GLYCOL	DIETHYLENE GLYCOL	111-46-3
DIETHYLENE GLYCOL ACETATE	DIETHYLENE GLYCOL ACETATE	1330-20-7
DIETHYLENE GLYCOL MONOACETATE	DIETHYLENE GLYCOL MONOACETATE	141-78-6
DIETHYLENE GLYCOL DIMETHYL ETHER	DIETHYLENE GLYCOL DIMETHYL ETHER	108-98-3
DIETHYLENE GLYCOL DIMETHYL ETHER ACETATE	DIETHYLENE GLYCOL DIMETHYL ETHER ACETATE	131-13-9
DIETHYLENE GLYCOL DIMETHYL ETHER DIMETHYL ETHER ACETATE	DIETHYLENE GLYCOL DIMETHYL ETHER DIMETHYL ETHER ACETATE	28182-81-2
DIETHYLENE GLYCOL DIMETHYL ETHER DIMETHYL ETHER DIMETHYL ETHER ACETATE	DIETHYLENE GLYCOL DIMETHYL ETHER DIMETHYL ETHER DIMETHYL ETHER ACETATE	28182-81-2

* Values given are in mg/m³
 ** Values given are in ug/m³
 *** As recommended by manufacturer
 <0> - SARA 313 REPORTABLE
 <0> - Contains a SARA 313 reportable material which may include xylene, toluene, and ethylbenzene. Percent may vary due to the distillation process.

This material does not contain intentionally added ingredients which are based on compounds of antimony, arsenic, cadmium, lead, mercury, selenium, or water soluble barium.

SECTION III — PHYSICAL DATA

WEIGHT PER GALLON 8.33 lbs. VOLUME PERCENT VOLATILE 64
 BOILING RANGE 168°F — 362°F VOC OF MATERIAL 592 gms./l.
 EVAPORATION RATE — Slower than Ether
 VAPOR DENSITY — Heavier than Air

SECTION IV — FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE
 VAPORS MAY CAUSE FLASH FIRE

FLASH POINT 24°F TCC

EXTINGUISHING MEDIA Dry Chemical or Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS — Keep away from heat, sparks, and flame. Do not smoke. Extinguish all pilot lights and turn off all sources of ignition, including heaters, fans, and other non-explosion-proof electrical equipment, during use and until all vapors are gone. Vapors may ignite explosively. Vapors may spread long distances and beyond closed doors. Prevent build up of vapors by maintaining a continuous flow of fresh air.

SPECIAL FIREFIGHTING PROCEDURES — Self contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode. In case of fire, use CO₂, Dry Chemical, Foam, or other approved method for treating a Class B fire. Summon professional firefighters.

Personnel who are fighting isocyanate fires should wear self-contained breathing apparatus and full protective clothing. During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. Closed container may explode when exposed to extreme heat or burst when contaminated with water (CO₂ evolved).

SECTION V — HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE (ACUTE)

EYES Liquid, aerosols or vapors of the product are irritating and can cause tearing, redness, blurred vision, and swelling accompanied by a stinging sensation and maybe a feeling like that of fine dust in the eyes.

SKIN Isocyanates react with skin proteins and moisture and can cause irritation. Symptoms of skin irritation may be redness, swelling, rash, scaling or blistering. Solvents can penetrate the skin causing effects similar to those identified under acute breathing symptoms. Some persons may develop skin sensitization from skin contact. Cured material is difficult to remove.

BREATHING Excessive inhalation of vapors can cause nasal and respiratory irritation, dizziness, weakness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation. May also cause tightness in the chest. Isocyanate vapors or mist at concentrations above the suggested TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a pre-existing, non-specific bronchial hyperactivity can respond to concentrations below the TLV with similar symptoms as well as an asthma attack. Exposure with above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g. fever, chills) has also been reported. INGESTION IS HARMFUL and can cause a burning sensation, nausea, vomiting and diarrhea. Can result in irritation and possible corrosive action in the mouth, stomach tissue and digestive tract.

SWALLOWING

ADDITIONAL EFFECTS OF OVEREXPOSURE (CHRONIC)

- Lasting loss of appetite, and a bad taste may be noted at high concentrations.
- Narcotic effects have been noted.
- Prolonged and repeated breathing of spray mist and/or sanding dust over a period of years may cause diseases of the lungs.
- Can cause irritation to mucous membranes.
- May cause injury to kidneys and liver.
- Corneal effects may occur.
- Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with isocyanates. Once a person is diagnosed as sensitized to an isocyanate no further exposure can be permitted.
- Allergic skin or respiratory reaction may occur in some individuals. Respiratory sensitivity results in asthma-like symptoms or subsequent exposure even below the TLV. Skin sensitivity results in allergic dermatitis which may include rash, itching, hives and swelling of extremities. In those who have developed a skin sensitization, these symptoms can develop as a result of contact with very small amounts of liquid material or even as a result of vapor-only exposure.
- High vapors may result in central nervous system depression.
- Hemorrhages into various vital organs have been noted.
- Coma may result from overexposure.

--As a result of previous repeated overexposures or a single large dose, certain individuals will develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the TLV. These symptoms, which include: chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Chronic overexposure to isocyanates has also been reported to cause lung damage, including decrease in lung function, which may be permanent. Sensitization may be either temporary or permanent.

WARNING: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

WARNING: Harmful or fatal if swallowed. Harmful if inhaled or absorbed through skin. Overexposure may cause blood disorders. Based on tests with laboratory animals, overexposure may cause reproductive disorders and birth defects.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Asthma and any other respiratory disorders (bronchitis, emphysema, hyperreactivity), skin allergies, eczema.

PER CALIFORNIA'S PROPOSITION 65:
WARNING: This product contains a chemical known by the state of California to cause cancer, birth defects or reproductive harm.

Product ingredients appear on the following carcinogenic listings:
() IARC () NTP () OSHA
(X) None of the above.

PRIMARY ROUTE(S) OF ENTRY (X) SKIN (X) BREATHING (X) SWALLOWING
FIRST AID.

IN CASE OF SKIN CONTACT:

Wash area thoroughly with soap and water. Remove soiled clothing. Get medical assistance if irritation persists. Wash clothing before reuse.

IN CASE OF EYE CONTACT:

Flush with large amounts of water for at least 15 minutes occasionally lifting eyelids. Get medical assistance.

IF SWALLOWED:

GET MEDICAL ATTENTION IMMEDIATELY. DO NOT induce vomiting. Aspiration of material into lungs can cause chemical pneumonitis which may be fatal.

IF INHALED:

If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, summon medical assistance immediately. If breathing ceases, restore using approved CPR techniques and summon medical help immediately. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Treatment is essentially symptomatic.

SECTION VI — REACTIVITY DATA

POLYMERIZATION: -- May occur if in contact with moisture or other materials which react with isocyanates. May occur at temperatures over 400°F (204°C).

MATERIALS TO AVOID

Excess heat and/or oxidizing materials.

Avoid contact with water, alcohols, amines, strong bases, metal compounds, or surface active materials.

In addition: Chlorosulfonic acid

If container is exposed to high heat, it can be pressurized and possibly rupture explosively. Isocyanates react slowly with water to form CO₂ gas. This gas can cause sealed containers to expand and possibly rupture explosively.

HAZARDOUS DECOMPOSITION

May decompose into fumes containing carbon monoxide, carbon dioxide, oxides of nitrogen, traces of HCN and HDI.

SECTION VII — SPILL OR LEAK PROCEDURES

SMALL SPILL: Absorb liquid on inert material such as paper, vermiculite, floor absorbent, and transfer to hood.

LARGE SPILL

Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, contain area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be absorbed with inert material such as sand, clay, earth, or floor absorbent, and shoveled into containers with non-sparking tools. Prevent run-off to sewers, streams, or other bodies of water. If run-off occurs, notify the proper authorities as required that a spill has occurred.

WASTE DISPOSAL METHOD

Allow volatile portion to evaporate in hood being sure to allow sufficient time for vapors to completely clear hood dust work. Dispose of contaminated absorbent, container and unused contents in accordance with local, state, and federal regulations. Do not incinerate closed containers.

SECTION VIII — PROTECTIVE EQUIPMENT

VENTILATION/RESPIRATORY PROTECTION

Use only with adequate ventilation. Maintain continuous flow of fresh air. Do not breathe vapors, spray mists, or sanding dusts. Wear appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor, mist, and particulate levels are below applicable limits. Follow respirator manufacturer's directions for respirator use. Engineering or administrative controls should be implemented to reduce exposure. Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV's.

PERSONAL PROTECTIVE EQUIPMENT

Do not get in eyes, on skin, or on clothing. Use solvent resistant safety eyewear with splash guards. Contact lenses should not be worn. Solvent impermeable gloves, clothing, and boots are recommended to prevent skin contact. In addition a respirator that is recommended or approved for use in isocyanate containing environments should be used. A positive pressure air supplied respirator (TC-19C NIOSH/MSHA) is recommended.

SECTION IX — SPECIAL PRECAUTIONS AND ADDITIONAL COMMENTS

Keep closure tight and upright to prevent leakage. Keep container closed when not in use. Do not store above 120°F. Do not transfer contents to bottles or other unlabeled containers.

Containers of this material may be hazardous when emptied because they retain product residues (vapor, liquid, and/or solid). All hazard precautions given in this data sheet must be observed.

IMPORTANT!!

This product may be blended with other products prior to use. Read all warnings and precautions on the labels of all products being blended as the combination may contain the hazards of each component.

MSD-WARRANTY

The information presented herein, while not guaranteed, is to the best of our knowledge true and accurate. No warranty or guarantee expressed or implied is made regarding the performance of any product, since the manner of use is beyond our control. No suggestion for product use, nor anything contained herein, shall be construed as a recommendation for its use in infringement of any existing patent, and U.S. Patent assumes no responsibility or liability for operations that do infringe any such patents.

FOR INDUSTRIAL USE ONLY

By professional, trained personnel using proper equipment. Not intended for sale to, or use by, the general public.

G3010

USP-1

10-07-1985

R. 01-03-1988

R. 11-05-1986

R. 07-10-1987

R. 02-29-1988

R. 01-13-1989

R. 10-31-1989

D.O.T. PROPER SHIPPING NAME: PAINT
D.O.T. HAZARD CLASS: FLAMMABLE LIQUID
D.O.T. HAZARD IDENTIFICATION NUMBER: 023113
D.O.T. LABELING REQUIREMENTS: DANGEROUS
E.C.O.C. HAZARD STATEMENT: DANGEROUS
E.C.O.C. UN NUMBER: 01113
E.C.O.C. CLASS NUMBER: 3.2
E.C.O.C. PAGES NUMBER: 1057

MATERIAL SAFETY DATA SHEET

FOR COATINGS, RESINS, AND RELATED MATERIALS

DATE OF PREPARATION - 10-31-1989

SECTION I

MANUFACTURER U. S. PAINT
831 S. 21st Street
St. Louis, Missouri 63103

INFORMATION (314) 621-0825

EMERGENCY CHEMTREC --- 1800-424-9300

PRODUCT CLASS MODIFIED ACRYLIC RESIN

TRADE NAME FOXFIRE CLEAR-COTE™ ACRYLIC URETHANE TOPCOAT

CODE F3016

SECTION II - HAZARDOUS INGREDIENTS

[COMMON NAME]		[CHEMICAL NAME]		[CAS #]	
		TRANSITION LIMIT		STYL. RES. LIMITS	
ACRIDIN	ACRIDIN	OSHA	OSHA	OSHA	OSHA
WGT. %	WGT. %	WGT. %	WGT. %	WGT. %	WGT. %
1	100	100	100	100	100
2	100	100	100	100	100
3	100	100	100	100	100
4	100	100	100	100	100
5	100	100	100	100	100
6	100	100	100	100	100
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[COMMON NAME]		[CHEMICAL NAME]		[CAS #]	
		TRANSITION LIMIT		STYL. RES. LIMITS	
ACRIDIN	ACRIDIN	OSHA	OSHA	OSHA	OSHA
WGT. %	WGT. %	WGT. %	WGT. %	WGT. %	WGT. %
1	100	100	100	100	100
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* Values given are in 100%
 ** Values given are in 100%
 *** As recommended by manufacturer
 (1) -- Acute Oral LD50 Rabbit
 (2) -- Acute Oral LD50 Rat
 (3) -- Acute Oral LD50 Dog
 (4) -- Acute Oral LD50 Monkey
 (5) -- Acute Oral LD50 Human
 (6) -- Acute Oral LD50 Fish
 (7) -- Acute Oral LD50 Bird
 (8) -- Acute Oral LD50 Invertebrate
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PRIMARY ROUTE(S) OF ENTRY (X) SKIN (X) BREATHING (X) SWALLOWING

FIRST AID:

IN CASE OF SKIN CONTACT:

Wash area thoroughly with soap and water. Remove soiled clothing. Get medical assistance if irritation persists. Wash clothing before reuse.

IN CASE OF EYE CONTACT:

Flush with large amounts of water for at least 15 minutes. Get medical assistance.

IF SWALLOWED:

GET MEDICAL ATTENTION IMMEDIATELY. DO NOT induce vomiting. Aspiration of material into lungs can cause chemical pneumonitis which may be fatal.

IF INHALED:

If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, summon medical assistance immediately. If breathing ceases, restore using approved CPR techniques and summon medical help immediately.

SECTION VI — REACTIVITY DATA

HAZARDOUS POLYMERIZATION — Can not occur.

STABILITY — Stable.

MATERIALS TO AVOID

Excess heat and/or oxidizing materials.

In addition

Chloroform
Potassium-tert-butoxide
Chlorosulfonic acid
Hydrogen peroxide
Nitric acid

HAZARDOUS DECOMPOSITION

May decompose into fumes containing carbon monoxide and carbon dioxide.

When heated to decomposition emits toxic fumes.

SECTION VII — SPILL OR LEAK PROCEDURES

SMALL SPILL Absorb liquid on inert material such as paper, vermiculite, floor absorbent, and transfer to hood.

LARGE SPILL Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, contain area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be absorbed with inert material such as sand, clay, earth, or floor absorbent, and shoveled into containers with non-sparking tools. Prevent run-off to sewers, streams, or other bodies of water. If run-off occurs, notify the proper authorities as required that a spill has occurred.

WASTE DISPOSAL METHOD

Allow volatile portion to evaporate in hood being sure to allow sufficient time for vapors to completely clear hood duct work. Dispose of contaminated absorbent, container and unused contents in accordance with local, state, and federal regulations. Do not incinerate closed containers.

SECTION VIII — PROTECTIVE EQUIPMENT

VENTILATION/RESPIRATORY PROTECTION

Use only with adequate ventilation. Maintain continuous flow of fresh air. Do not breathe vapors, spray mists, or sanding dusts. Wear appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor, mist, and particulate levels are below applicable limits. Follow respirator manufacturer's directions for respirator use. Engineering or administrative controls should be implemented to reduce exposure. Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

PERSONAL PROTECTIVE EQUIPMENT

Do not get in eyes, on skin, or on clothing. Use solvent resistant safety eyewear with splash guards. Solvent impermeable gloves, clothing, and boots are recommended to prevent skin contact.

SECTION IX — SPECIAL PRECAUTIONS AND ADDITIONAL COMMENTS

Keep closure tight and upright to prevent leakage. Keep container closed when not in use. Do not store above 120°F. Do not transfer contents to bottles or other unlabeled containers.

Containers of this material may be hazardous when emptied because they retain product residues (vapor, liquid, and/or solid). All hazard precautions given in this data sheet must be observed.

IMPORTANT!!

This product may be blended with other products prior to use. Read all warnings and precautions on the labels of all products being blended as the combination may contain the hazards of each component.

NON-WARRANTY

The information presented herein, while not guaranteed, is to the best of our knowledge true and accurate. No warranty or guarantee expressed or implied is made regarding the performance of any product, since the manner of use is beyond our control. No suggestion for product use, for anything contained herein, shall be construed as recommendation for its use in infringement of any existing patent, and U.S. Patent assumes no responsibility or liability for operation that infringe any such patents.

FOR INDUSTRIAL USE ONLY

By professional, trained personnel using proper equipment. Not intended for sale to, or use by, the general public.

F 3016

USP-1

10-17-1985

R. 06-05-1986

DATE OF PREPARATION - 10-31-1989

CODE
S3301[illegible][illegible]

This material does not contain intentionally added ingredients which are based on compounds of antimony, arsenic, cadmium, lead, mercury, selenium, or water soluble barium.

EXTINGUISHING MEDIA — Dry Chemical or Foam

SPECIAL FIREFIGHTING PROCEDURES — Self contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode. In case of fire, use CO₂, Dry Chemical, Foam, or other approved method for treating a Class B fire. Summon professional firefighters. During a fire, toxic gases and smoke are irritants present from decomposition/combustion. Cinsed container may explode when exposed to extreme heat.

QUALITY

...blay cause injury to kidneys. Five, and

WARNING: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

PER CALIFORNIA'S PROPOSITION 65:

WARNING: This product contains a chemical known by the state of California to cause cancer, birth defects or reproductive harm.

Product ingredients appear on the following carcinogenic listings:

() IARC () NTP () OSHA
(X) None of the above.

PRIMARY ROUTE(S) OF ENTRY (X) SKIN (X) BREATHING (X) SWALLOWING

FIRST AID:

IN CASE OF SKIN CONTACT:

Wash area thoroughly with soap and water. Remove soiled clothing. Get medical assistance if irritation persists. Wash clothing before reuse.

IN CASE OF EYE CONTACT:

Flush with large amounts of water for at least 15 minutes. Get medical assistance.

IF SWALLOWED:

GET MEDICAL ATTENTION IMMEDIATELY. DO NOT induce vomiting. Aspiration of material into lungs can cause chemical pneumonitis which may be fatal.

IF INHALED:

If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, summon medical assistance immediately. If breathing ceases, restore using approved CPR techniques and summon medical help immediately.

SECTION VI — REACTIVITY DATA

HAZARDOUS POLYMERIZATION — Can not occur.

STABILITY — Stable.

MATERIALS TO AVOID

Excess heat and/or oxidizing materials.

In addition: Chromium trioxide
Chloroform
Potassium-tert-butoxide
Chlorosulfonic acid
Hydrogen peroxide
Nitric acid
Strong acids

HAZARDOUS DECOMPOSITION

May decompose into fumes containing carbon monoxide, carbon dioxide, and oxides of nitrogen.

When heated to decomposition emits toxic fumes.

SECTION VII — SPILL OR LEAK PROCEDURES

SMALL SPILL Absorb liquid on inert material such as paper, vermiculite, floor absorbent, and transfer to hood.

LARGE SPILL Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source. Contain area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be absorbed with inert material such as sand, clay, earth, or floor absorbent, and shoveled into containers with non-sparking tools. Prevent run-off to sewers, streams, or other

bodies of water. If run-off occurs, notify the proper authorities as required that a spill has occurred.

WASTE DISPOSAL METHOD

Allow volatile portion to evaporate in hood being sure to allow sufficient time for vapors to completely clear hood duct work. Dispose of contaminated absorbent, container and unused contents in accordance with local, state, and federal regulations. Do not incinerate closed containers.

SECTION VIII — PROTECTIVE EQUIPMENT

VENTILATION/RESPIRATORY PROTECTION

Use only with adequate ventilation. Maintain continuous flow of fresh air. Do not breathe vapors, spray mists, or sanding dusts. Wear appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor, mist, and particulate levels are below applicable limits. Follow respirator manufacturer's directions for respirator use. Engineering or administrative controls should be implemented to reduce exposure.

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV's.

PERSONAL PROTECTIVE EQUIPMENT

Do not get in eyes, on skin, or on clothing. Use solvent resistant safety eyewear with splash guards. Solvent impermeable gloves, clothing, and boots are recommended to prevent skin contact.

SECTION IX — SPECIAL PRECAUTIONS AND ADDITIONAL COMMENTS

Keep closure tight and upright to prevent leakage. Keep container closed when not in use. Do not store above 120°F. Do not transfer contents to bottles or other unlabeled containers.

Containers of this material may be hazardous when emptied because they retain product residues (vapor, liquid, and/or solid). All hazard precautions given in this data sheet must be observed.

IMPORTANT!

This product may be blended with other products prior to use. Read all warnings and precautions on the labels of all products being blended as the combination may contain the hazards of each component.

NO WARRANTY

The information presented herein, while not guaranteed, is to the best of our knowledge true and accurate. No warranty or guarantee expressed or implied is made regarding the performance of any product, since the manner of use is beyond our control. No suggestion for product use, nor anything contained herein, shall be construed as a recommendation for its use in infringement of any existing patent, and U.S. Patent assumes no responsibility or liability for operations that do infringe any such patents.

FOR INDUSTRIAL USE ONLY

By professional, trained personnel using proper equipment. Not intended for sale to, or use by, the general public.

S3001

USP-2

10-04-1985

R. 12-19-1985

R. 02-19-1987

R. 01-09-1989

MATERIAL SAFETY DATA SHEET

FOR COATINGS, RESINS, AND RELATED MATERIALS

DATE OF PREPARATION - 03-16-1990

SECTION I

MANUFACTURER U. S. PAINT

831 S. 21st Street
St. Louis, Missouri 63103

INFORMATION (314) 821-0525

EMERGENCY CHEMTREC --- 1-800-424-9300

PRODUCT CLASS MODIFIED EPOXY RESIN

TRADE NAME 30-Y-94* Non-Sanding Mil-Spec Anti-Corrosive Epoxy Primer
For Fast Recoat Yellow Base Meets: MIL-P-2337D

CODE S9601

SECTION II - HAZARDOUS INGREDIENTS

[COMMON NAME]	[CHEMICAL NAME]	[CAS #]
ISOBUTYL ALCOHOL	2-BUTANOL	78-83-1
6 50 NE	50 NE	2.4(2)
NORMAL BUTYL ACETATE	BUTYL ETHANOATE	123-86-4
6 150 NE	150 NE	13.1(2)
PROPYLENE GLYCOL MONOMETHYL ETHER	1-METHOXY 2-PROPANOL	107-98-2
6 100 NE	100 NE	2(1)
CANADIAN ETHYL METHANE	2-BUTANONE	78-93-3
9 200 NE	200 NE	3.3(2)
CANADIAN TOLUENE	METHYL BENZENE	100-88-3
6 100 NE	100 NE	5(2)
EPOXY RESIN	NE NE	NE NA
26 NE	SILICON DIOXIDE	14808-60-7
CRYSTALLINE SILICA	.1* NE	NA
5 .1* NE	.1* NE	NA
CHROMIUM PIGMENT(S)	.1* NE	NA
18 .05* NE	.1* NE	NA

* Values given are in mg/m³
 ** Values given are in mg/m³
 *** As recommended by manufacturer
 <A> - SARA 313 REPORTABLE
 - Contains a SARA 313 reportable material which may include xylene, toluene, and ethylbenzene.
 Percent may vary due to the distillation process.
 Hgppf - Million particles per cubic foot.

Care should be taken when sanding pigmented paints. Airborne nuisance particulates have an ACGIH TLV of total dust = 10 mg/m³.

This material does not contain intentionally added ingredients which are based on compounds of antimony, arsenic, cadmium, lead, mercury, selenium, or water soluble barium.

SECTION III - PHYSICAL DATA

WEIGHT PER GALLON 11.36 lbs.

VOLUME PERCENT VOLATILE 57

BOILING RANGE 172°F - 262°F

VOC OF MATERIAL 487 gms./l.

EVAPORATION RATE - Slower than Ether

VAPOR DENSITY - - - - - Heavier than Air

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

DANGER! - FLAMMABLE

VAPORS MAY CAUSE FLASHFIRE.

FLASH POINT 21°F TCC LEL 120

EXTINGUISHING MEDIA - Dry Chemical or Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS - Keep away from heat, sparks, and flame.

Do not smoke. Extinguish all pilot lights and turn off all sources of ignition, including heaters, fans, and other non-explosion-proof electrical equipment, during use and until all vapors are gone. Vapors may ignite explosively. Vapors may spread long distances and beyond closed doors. Prevent build up of vapors by maintaining a continuous flow of fresh air.

SPECIAL FIREFIGHTING PROCEDURES - Self contained breathing apparatus with a full facemask operated in pressure-demand or other positive pressure mode. In case of fire, use CO₂, Dry Chemical, Foam, or other approved method for treating a Class B fire. Sanction professional firefighters. During a fire, toxic gases and smoke are irritants present from decomposition/combustion. Closed containers may explode when exposed to extreme heat.

SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE (ACUTE)

EYES

Can cause severe irritation, redness, tearing, and blurred vision. Contains materials that may cause severe eye injury -- damage reversible.

SKIN

Prolonged or repeated contact can cause moderate irritation, dermatitis, and dryness. May be a weak sensitizer. Can cause allergic skin reaction in certain individuals. Solvents can penetrate the skin causing effects similar to those identified under acute breathing symptoms.

BREATHING

Excessive inhalation of vapors can cause nasal and respiratory irritation, dizziness, weakness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation. May also cause tightness in the chest.

SWALLOWING

INGESTION IS HARMFUL and can cause a burning sensation, sore throat, abdominal pain, nausea, vomiting, and diarrhea.

ADDITIONAL EFFECTS OF OVEREXPOSURE (CHRONIC)

—Long term, unprotected exposure to dust levels in excess of the PEL may cause lung disease (silicosis). Follow the Safe Handling Practices shown on the label.
 —Prolonged and repeated breathing of spray mist and/or sanding dust over a period of years may cause diseases of the lungs.
 —Lassitude, loss of appetite, and a bad taste may be noted at high concentrations.
 —High vapors may result in central nervous system depression.

—Mild allergen.

—Narcotic effects have been noted.

—May cause injury to kidneys and liver.

—May cause lung injury.

—Chromate salts are recognized carcinogens of the lungs, nasal cavity, and paranasal sinus, also experimental carcinogens of the stomach and larynx.

—Goma may result from overexposure.

with inert material such as sand, clay, earth, or floor absorbent, and shoveled into containers with non-sparking tools. Prevent run-off to sewers, streams, or other bodies of water. If run-off occurs, notify the proper authorities as required that a spill has occurred.

WASTE DISPOSAL METHOD

Allow volatile portion to evaporate in hood being sure to allow sufficient time for vapors to completely clear hood duct work. Dispose of contaminated absorbent, container and unused contents in accordance with local, state, and federal regulations. Do not incinerate closed containers.

SECTION VIII — PROTECTIVE EQUIPMENT

VENTILATION/RESPIRATORY PROTECTION

Use only with adequate ventilation. Maintain continuous flow of fresh air. Do not breathe vapors, spray mists, or sanding dusts. Wear appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor, mist, and particulate levels are below applicable limits. Follow respirator manufacturer's directions for respirator use. Engineering or administrative controls should be implemented to reduce exposure. Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

PERSONAL PROTECTIVE EQUIPMENT

Do not get in eyes, on skin, or on clothing. Use solvent resistant safety eyewear with splash guards. Solvent impermeable gloves, clothing, and boots are recommended to prevent skin contact.

SECTION IX — SPECIAL PRECAUTIONS AND ADDITIONAL COMMENTS

Keep closure tight and upright to prevent leakage. Keep container closed when not in use. Do not store above 120°F. Do not transfer contents to bottles or other unlabelled containers.

Containers of this material may be hazardous when emptied because they retain product residue (vapor, liquid, and/or solid). All hazard precautions given in this data sheet must be observed.

IMPORTANT!!

This product may be blended with other products prior to use. Read all warnings and precautions on the labels of all products being blended as the combination may contain the hazards of each component.

NOX-WARRANTY

The information presented herein, while not guaranteed, is to the best of our knowledge true and accurate. No warranty or guarantee expressed or implied is made regarding the performance of any product, since the manner of use is beyond our control. No suggestion for product use, nor anything contained herein, shall be construed as a recommendation for its use in infringement of any existing patent, and U.S. Patent assumes no responsibility or liability for operations that do infringe any such patents.

FOR INDUSTRIAL USE ONLY

By professional, trained personnel using proper equipment. Not intended for sale to, or use by, the general public.

S9001

USP-5

10-14-1985

R. 12-12-1985

R. 02-25-1987

R. 03-08-1988

R. 01-01-1989

R. 10-31-1989

D.O.T. PROPER SHIPPING NAME: 2ALINE
D.O.T. HAZARD CLASS: FLAMMABLE LIQUID
D.O.T. HAZARD IDENTIFICATION NUMBER: 03113
D.O.T. LABEL(S) REQUIRED: FLAMMABLE LIQUID
I.M.C. SHIPPING NAME: PAINT
I.M.C. HAZARD CLASS: 03113
I.M.C. HAZARD CLASS NUMBER: 1
I.M.C. HAZARD CLASS NUMBER: 3057

Prolonged overexposure by inhalation may cause delayed lung injury/disease (silicosis). On the basis of initial experimental tests in animals and limited epidemiological studies in human populations, the International Agency for Research on Cancer (IARC) has concluded that there is limited evidence for the carcinogenicity of crystalline silica to humans. IARC has convened a special task force to review the carcinogenicity of silica.

WARNING! Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Medical conditions which may be aggravated: PRE-EXISTING UPPER RESPIRATORY AND LUNG DISEASE SUCH AS, BUT NOT LIMITED TO BRONCHITIS, EMPHYSEMA AND ASTHMA.

PER CALIFORNIA'S PROPOSITION 65:

WARNING: This product contains a chemical known by the state of California to cause cancer, birth defects or reproductive harm.

Product ingredients appear on the following carcinogenic listings:

(X) IARC (X) NTP (X) OSHA
() None of the above.

PRIMARY ROUTE(S) OF ENTRY (X) SKIN (X) BREATHING (X) SWALLOWING

FIRST AID:

IN CASE OF SKIN CONTACT:

Wash area thoroughly with soap and water. Remove soiled clothing. Get medical assistance if irritation persists. Wash clothing before reuse.

IN CASE OF EYE CONTACT:

Flush with large amounts of water for at least 15 minutes. Get medical assistance.

IF SWALLOWED:

GET MEDICAL ATTENTION IMMEDIATELY. DO NOT induce vomiting. Aspiration of material into lungs can cause chemical pneumonitis which may be fatal.

IF INHALED:

If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, summon medical assistance immediately. If breathing ceases, restore using approved CPR techniques and summon medical help immediately.

SECTION VI — REACTIVITY DATA

HAZARDOUS POLYMERIZATION — Can not occur.

STABILITY — Stable.

MATERIALS TO AVOID

Excess heat and/or oxidizing materials.

Contamination with strong acids, bases, amines, or mercaptans can cause polymerization.

Store in stainless steel or aluminum containers.

In addition Chloroform

Potassium-tert-butoxide

Chlorosulfonic acid

Hydrogen peroxide

Nitric acid

HAZARDOUS DECOMPOSITION

May decompose into fumes containing carbon monoxide and carbon dioxide.

When heated to decomposition emits toxic fumes.

SECTION VII — SPILL OR LEAK PROCEDURES

SMALL SPILL Absorb liquid on inert material such as paper, vermiculite, floor absorbent, and transfer to hood.

LARGE SPILL Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, contain area or spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be absorbed

FOR COATINGS, RESINS, AND RELATED MATERIALS

DATE OF PREPARATION - 10-31-89

MANUFACTURER U.S. PAINT

221 S. 21st Street
St. Louis, Missouri 63103

INFORMATION (314) 621-0525

CHEMTRAC -- 1-800-424-9300
EMERGENCY

PRODUCT CLASS SOLVENT BLEND

THADE NAME	STANDARD REDUCER FOR EPOXY PRIMERS
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SECTION II -- HAZARDOUS INGREDIENTS

[illegible]

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total time = 10 min.

This material does not contain intentionally added ingredients which are based on compounds of antimony, arsenic, cadmium, mercury, selenium, or water soluble barium.

SECTION III -- PHYSICAL DATA

WEIGHT PER GALLON 7.13 lbs.

VOLUME PERCENT VOLATILE 100

BOILING RANGE 172°F - 262°F

VOC OF MATERIAL 854 gms./l.

EVAPORATION RATE — Slower than Ether
VAPOR DENSITY — Heavier than Air

SECTION IV — FIRE AND EXPLOSION HAZARD DATA

DANGER - FLAMMABLE.

VAPORS MAY CAUSE FLASH FIRE.

FLASH POINT 21°F TCG LEL 1.27

EXTINGUISHING MEDIA — Dry Chemical or Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS — Keep away from heat, sparks, and flame. Do not smoke. Extinguish all pilot lights and turn off all sources of ignition, including heaters, fans, and other non-explosion-proof electrical equipment, during use and until all vapors are gone. Vapors may ignite explosively. Vapors may spread long distances and beyond closed doors. Prevent build up of vapors by maintaining a continuous flow of fresh air.

SPECIAL FIREFIGHTING PROCEDURES — Self contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode, in case of fire, use CO₂ Dry Chemical Foam, or other approved method for treating a Class B fire. Summon professional firefighters.

SECTION V -- HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE (ACUTE)

EYES	Can cause severe irritation, redness, tearing, and blurred vision.
SKIN	Prolonged or repeated contact can cause moderate irritation, deslating, and dermatitis.
BREATHING	Excessive inhalation of vapors can cause nasal and respiratory irritation, dizziness, weakness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation.
SWALLOWING	INGESTION IS HARMFUL, and can cause a burning sensation, nausea, vomiting, and diarrhea.

ADDITIONAL EFFECTS OF OVEREXPOSURE (CHRONIC):

-Prolonged and repeated breathing of spray mist and/or sanding dust over a period of years may cause diseases of the lungs.
-Nasal and respiratory irritant.
-Lassitude, loss of appetite, and a bad taste may be noted at high concentrations.
-Mild allergen.
-Narcotic effects have been noted.
-Corneal effects may occur.

WARNING: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Primer α -ketoglutarate [K] β -alanine [A]
 γ -aminobutyrate [G] δ -valerate [V]

FIRST AID:

IN CASE OF SKIN CONTACT:

Wash area thoroughly with soap and water. Remove soiled clothing. Get medical assistance if irritation persists. Wash clothing before reuse.

IN CASE OF EYE CONTACT:

Flush with large amounts of water for at least 15 minutes. Get medical assistance.

IF SWALLOWED:

GET MEDICAL ATTENTION IMMEDIATELY. DO NOT induce vomiting. Aspiration of material into lungs can cause chemical pneumonitis which may be fatal.

IF INHALED:

If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, summon medical assistance immediately. If breathing ceases, restore using approved CPR techniques and summon medical help immediately.

SECTION VI — REACTIVITY DATA

HAZARDOUS POLYMERIZATION — Can not occur.

STABILITY — Stable.

MATERIALS TO AVOID

Excess heat and/or oxidizing materials.

In addition
Aluminum
Circonium trioxide
Chloroform
Potassium-tert-butoxide
Chlorosulfonic acid
Hydrogen peroxide
Nitric acid

HAZARDOUS DECOMPOSITION

May decompose into fumes containing carbon monoxide and carbon dioxide

When heated to decomposition emits toxic fumes.

SECTION VII — SPILL OR LEAK PROCEDURES

SMALL SPILL Absorb liquid on inert material such as paper, vermiculite, floor absorbent, and transfer to hood.

LARGE SPILL Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from areas of spill until clean-up has been completed. Stop spill at source, contain area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be absorbed with inert material such as sand, clay, earth, or floor absorbent, and shoveled into containers with non-sparking tools. Prevent run-off to sewers, streams, or other bodies of water. If run-off occurs, notify the proper authorities as required that a spill has occurred.

WASTE DISPOSAL METHOD

Allow volatile portion to evaporate in hood being sure to allow sufficient time for vapors to completely clear hood duct work. Dispose of contaminated absorbent, container and unused contents in accordance with local, state, and federal regulations. Do not incinerate closed containers.

SECTION VIII — PROTECTIVE EQUIPMENT

VENTILATION/RESPIRATORY PROTECTION

Use only with adequate ventilation. Maintain continuous flow of fresh air. Do not breathe vapors, spray mists, or sanding dusts. Wear appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor, mist, and particulate levels are below applicable limits. Follow respirator manufacturer's directions for respirator use. Engineering or administrative controls should be implemented to reduce exposure. Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(g).

PERSONAL PROTECTIVE EQUIPMENT

Do not get in eyes, on skin, or on clothing. Use solvent resistant safety eyewear with splash guards. Solvent impermeable gloves, clothing, and boots are recommended to prevent skin contact.

SECTION IX — SPECIAL PRECAUTIONS AND ADDITIONAL COMMENTS

Keep closure tight and upright to prevent leakage. Keep container closed when not in use. Do not store above 120°F. Do not transfer contents to bottles or other unlabeled containers.

Containers of this material may be hazardous when emptied because they retain product residue (vapor, liquid, and/or solid). All hazard precautions given in this data sheet must be observed.

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FOR INDUSTRIAL USE ONLY

By professional, trained personnel using proper equipment. Not intended for sale to, or use by, the general public.

USP-2

10-14-1985

R.12-12-1985

R.05-18-1987

MATERIAL SAFETY DATA SHEET / FICHE SIGNALÉTIQUE

SECTION I — MATERIAL IDENTIFICATION AND USE / IDENTIFICATION DE LA MATIÈRE ET USAGE

MATERIAL NAME / IDENTIFIER — NOM / IDENTIFICATION DE LA MATIÈRE

URETHANE BASE - GLOSS YELLOW DURATHANE
4600-Y-9
7600-Y-31 (4600)

FLAT YELLOW DURATHANE
4700-Y-9

**BRISTOL AEROSPACE
LIMITED**
OCT 20 1989
PERSONNEL

MANUFACTURER'S NAME/NOM DU FABRICANT TEMPO PAINT (DIV. OF TOWER CHEMICALS)		SUPPLIER'S NAME/NOM DU FOURNISSEUR TEMPO PAINT (DIV. OF TOWER CHEMICALS)	
STREET ADDRESS/ADRESSE 205 FENMAR DRIVE		STREET ADDRESS/ADRESSE 205 FENMAR DRIVE	
CITY/VILLE WESTON,		CITY/VILLE WESTON	
PROVINCE ONTARIO		PROVINCE ONTARIO	
POSTAL CODE/CODE POSTAL M9L 2X4		POSTAL CODE/CODE POSTAL M9L 2X4	
EMERGENCY PHONE NO./N° DE TÉLÉPHONE D'URGENCE CANUTEC 1-613-996-6666		EMERGENCY PHONE NO./N° DE TÉLÉPHONE D'URGENCE CANUTEC 1-613-996-6666	
CHEMICAL NAME/DÉNOMINATION CHIMIQUE POLYESTER COATING		CHEMICAL FAMILY/FAMILLE CHIMIQUE MIXTURE	CHEMICAL FORMULA/FORMULE CHIMIQUE N/AP
TRADE NAME AND SYNONYMS/APPELLATION COMMERCIALE ET SYNONYMES 4600 DURATHANE, Yellow		MOLECULAR WEIGHT/POIDS MOLECULAIRE N/AP	MATERIAL USE/UTILISATION DE LA MATIÈRE COATING

SECTION II — HAZARDOUS INGREDIENTS OF MATERIAL / INGRÉDIENTS DANGEREUX DE LA MATIÈRE

HAZARDOUS INGREDIENTS/INGRÉDIENTS DANGEREUX	APPROXIMATE CONCENTRATION % CONCENTRATION APPROXIMATIVE (%)	C.A.S. NO. OR U.N. NUMBER NUMÉRO C.A.S. OU O.N.U.	LD ₅₀ (SPECIFY SPECIES & ROUTE) D.L. (PRÉCISER L'ESPECE ET LA VOIE D'ADMINISTRATION)	LC ₅₀ (SPECIFY SPECIES AND ROUTE) D.L. (PRÉCISER L'ESPECE ET LA VOIE D'ADMINISTRATION)
Lead Chromate	30-60	7758-97-6	Oral Rat >2000 Mg/Kg	N/AV
Polyester Polyols	30-60	N/AV	N/AV	N/AV
Propylene Glycol Mono Methyl Ether Acetate	10-30	107-98-2	Oral Rat 5710 Mg/Kg	Inhalation Rat 5344 ppm/ 4 Hrs
2,4 Pentanedione	1-5	123-54-6	Oral Rat 1000 Mg/Kg	N/AV
2-Ethoxy Ethyl Acetate	1-5	111-15-9	Oral Rat 2900 Mg/Kg Dermal Rabbit 10500 Mg/Kg	N/AV
Lead Sulfate	1-5	7446-14-2	Oral Rat >2000 Mg/Kg	N/AV

SECTION III — PHYSICAL DATA FOR MATERIAL / CARACTÉRISTIQUES PHYSIQUES DE LA MATIÈRE

PHYSICAL STATE/ÉTAT PHYSIQUE <input type="checkbox"/> GAS/GAZ <input checked="" type="checkbox"/> LIQUID/LIQUIDE <input type="checkbox"/> SOLID/SOLIDE		ODOUR AND APPEARANCE/ODEUR ET APPARENCE YELLOW VISCOUS LIQUID, PUNGENT ODOUR	
ODOUR THRESHOLD (PPM) SEUIL DE L'ODEUR (PPM)	0.14-0.25	VAPOR PRESSURE (MM. TENSION DE VAPEUR (MM.	N/AV
SPECIFIC GRAVITY/ DENSITÉ RELATIVE	1.52	VAPOR DENSITY (AIR = 1) DENSITÉ DE VAPEUR (AIR = 1)	N/AV
EVAPORATION RATE/ TAUX D'ÉVAPORATION	Slow	FREEZING POINT (°C) POINT DE CONGÉLATION (°C)	N/AP
BOILING POINT (°C) POINT D'ÉBULLITION (°C) (Skin)	140-166	SOLUBILITY IN WATER (G/G) SOLUBILITÉ DANS L'EAU (G/G)	NIL
% VOLATILE (BY WEIGHT) % VOLATILE (PAR POIDS)	22.7	COEFFICIENT OF WATER OIL DISTRIBUTION/ COEFFICIENT DE RÉPARTITION EAU/HUILE	N/AV
	N/AP		

SECTION IV — FIRE AND EXPLOSION HAZARD OF MATERIAL / RISQUES D'INCENDIE ET D'EXPLOSION DU MATÉRIEL

FLAMMABILITY/INFLAMMABILITÉ ☒ YES/OUÍ ☐ NO/NON

IF YES, UNDER WHICH CONDITIONS?/SI OUI, DANS QUELLES CONDITIONS? **SPARKS, FLAME, EXTREME HEAT.**

MEANS OF EXTINCTION/MOYENS D'EXTINCTION

WATER FOG, CO₂, DRY CHEMICAL, FOAM

SPECIAL PROCEDURES/MARCHÉ À SUIVRE SPÉCIALE

FULL EMERGENCY EQUIPMENT WITH SELF-CONTAINED BREATHING APPARATUS SHOULD BE WORN BY FIRE-FIGHTERS. USE COLD WATER TO COOL SURROUNDING DRUMS AND AREA. TOXIC AND IRRITATING GASES MAY BE PRESENT. ELIMINATE SPARKS, ELECTRICITY, HEAT AND OPEN FLAME. SOLVENT VAPOUR MAY SINK AND TRAVEL SOME DISTANCE AND BE RE-IGNITED.

FLASHPOINT (°C) AND METHOD/POINT D'ÉCLAIR (°C) ET MÉTHODE DE DÉTERMINATION 45 SETAFLASH	UPPER EXPLOSION LIMIT (% BY VOLUME)/ SEUIL MAXIMAL D'INFLAMMABILITÉ (% PAR VOLUME) 6.7	LOWER EXPLOSION LIMIT (% BY VOLUME)/ SEUIL MINIMAL D'INFLAMMABILITÉ (% PAR VOLUME) 1.7
AUTOIGNITION TEMPERATURE (°C)/TEMPÉRATURE D'AUTO-INFLAMMATION (°C) 354		HAZARDOUS COMBUSTION PRODUCTS/ PRODUITS DE COMBUSTION DANGEREUX CO, CO₂, TOXIC GASES, SMOKE

EXPLOSION DATA/DONNÉES SUR L'EXPLOSIBILITÉ

SENSITIVITY TO MECHANICAL IMPACT/SENSIBILITÉ AUX CHOCES N/AV	SENSITIVITY TO STATIC DISCHARGE/SENSIBILITÉ AUX DÉCHARGES ÉLECTROSTATIQUES N/AV
--	---

SECTION V — REACTIVITY DATA / DONNÉES SUR LA RÉACTIVITÉ

CHEMICAL STABILITY/STABILITÉ CHIMIQUE ☒ YES/OUÍ ☐ NO/NON

IF NO, UNDER WHICH CONDITIONS?/SI NON, DANS QUELLES CONDITIONS?

INCOMPATIBILITY TO OTHER SUBSTANCES/
INCOMPATIBILITÉ AVEC D'AUTRES SUBSTANCES ☒ YES/OUÍ ☐ NO/NON

IF SO, WHICH ONE(S)?/SI OUI, AVEC LESQUELLES? **THIS PRODUCT CONTAINS TRIMETHYLOL PROPANE AND SHOULD NOT**

BE COMBINED WITH PHOSPHOROUS CONTAINING MATERIAL AND OXIDANTS.

REACTIVITY AND UNDER WHAT CONDITIONS/REACTIVITÉ — DANS QUELLES CONDITIONS?

POLYMERIZATION WILL NOT OCCUR.

HAZARDOUS DECOMPOSITION PRODUCTS/PRODUITS DE DÉCOMPOSITION DANGEREUX

BY FIRE — CO, CO₂

SECTION VI — TOXICOLOGICAL PROPERTIES OF MATERIAL / PROPRIÉTÉS TOXICOLOGIQUES DE LA MATIÈRE

ROUTE OF ENTRY/VOIE D'ADMINISTRATION

☒ SKIN CONTACT/CONTACT AVEC LA PEAU

☐ SKIN ABSORPTION/ABSORPTION PAR LA PEAU

☒ EYE CONTACT/CONTACT OCULAIRE

☒ INHALATION ACUTE/INHALATION AIGÜE

☐ INHALATION CHRONIC/INHALATION CHRONIQUE

☒ INGESTION

EFFECTS OF ACUTE EXPOSURE TO MATERIAL/EFFETS DE L'EXPOSITION AIGÜE À LA MATIÈRE

SKIN CONTACT — CAN CAUSE REDNESS AND IRRITATION.

INHALATION — MAY IRRITATE NOSE AND THROAT AND CAUSE CHEST DISCOMFORT.

EYE CONTACT — LIQUID AND MIST MAY CAUSE IRRITATION AND REDNESS.

INGESTION — MAY CAUSE NAUSEA AND VOMITING.

EFFECTS OF CHRONIC EXPOSURE TO MATERIAL/EFFETS DE L'EXPOSITION CHRONIQUE À LA MATIÈRE

PROLONGED OVER EXPOSURE MAY LEAD TO DELAYED LIVER OR KIDNEY DAMAGE, AND MAY INJURE LUNGS, BLOOD AND NERVOUS SYSTEM.

SKIN — DERMATITIS.

MATERIAL NAME/IDENTIFIER
NOM/IDENTIFICATION DE LA MATIÈRE

URETHANE BASE, Yellow, 4600-Y-9

LD₅₀ OF MATERIAL (SPECIFY SPECIES & ROUTE)
LD₅₀ DE LA MATIÈRE (PRÉCISER L'ESPECE ET LA VOIE D'ADMINISTRATION)

NOT ESTABLISHED

LD₅₀ OF MATERIAL (SPECIFY SPECIES & ROUTE)
LD₅₀ DE LA MATIÈRE (PRÉCISER L'ESPECE ET LA VOIE D'ADMINISTRATION)

NOT ESTABLISHED

EXPOSURE LIMITS/LIMITES D'EXPOSITION

SEE PAGE 4

FLAMMABILITY OF MATERIAL/PROPRIÉTÉ INFLAMMABLE DE LA MATIÈRE

NOT ESTABLISHED

SENSITIZATION OF MATERIAL/SENSIBILISATION À LA MATIÈRE

N/AV

SYNERGISTIC MATERIALS/MATIÈRES SYNERGIQUES

N/AV

CARCINOGENICITY, REPRODUCTIVE EFFECTS, TERATOGENICITY, MUTAGENICITY/CANCÉROGÉNÉCITÉ, EFFETS NOCIFS SUR LA RÉPRODUCTION, TERATOGENÉCITÉ, MUTAGÉNÉCITÉ

**LEAD CHROMATE LISTED AS GROUP 2B IARC
APPENDIX A.2 ACGIH**

SECTION VII — PREVENTIVES MEASURES / MESURES PRÉVENTIVES

PERSONAL PROTECTIVE EQUIPMENT/MATÉRIEL PERSONNEL DE PROTECTION

GLOVES (SPECIFY/GANTS (PRÉCISER)

CHEMICAL RESISTANT GLOVES

EYE (SPECIFY/YEUX (PRÉCISER)

GOGGLES OR SAFETY GLASSES

RESPIRATORY (SPECIFY/APPAREIL RESPIRATOIRE (PRÉCISER)

RESPIRATOR APPROVED FOR ORGANIC VAPOUR.

OBSERVE OSHA REGULATIONS FOR RESPIRATOR USE (29CFR 1910.134)

OTHER (SPECIFY/AUTRES (PRÉCISER)

**SAFETY SHOWERS AND EYE WASH STATIONS SHOULD BE AVAILABLE.
EDUCATE EMPLOYEES IN SAFE USE OF MATERIALS.**

ENGINEERING CONTROLS (E.G. VENTILATION, ENCLOSED PROCESS, SPECIFY/MECANISMES TECHNIQUES (EX. VENTILATION, OPÉRATION EN MILIEU FERMÉ, PRÉCISER)

VENTILATE TO KEEP AIR CONCENTRATIONS BELOW 100 PPM FOR PMA.

LEAK AND SPILL PROCEDURE/MESURES EN CAS DE FUITE OU DE DÉVERSEMENT

**COVER WITH ABSORBENT MATERIAL, i.e. SAND, DIATOMACEOUS EARTH OR SWEEPING
COMPOUND.
COLLECT AND HANDLE AS NORMAL WASTE.**

WASTE DISPOSAL/ÉLIMINATION DES DÉCHETS

**WASTE MAY BE INCINERATED OR DISPOSED OF IN COMPLIANCE WITH LOCAL,
PROVINCIAL AND FEDERAL ENVIRONMENT CONTROL REGULATIONS.**

HANDLING PROCEDURES AND EQUIPMENTS/MÉTHODES ET ÉQUIPEMENT POUR LA MANUTENTION

MATERIAL IS HYDROSCOPIC.

STORAGE REQUIREMENTS/EXIGENCES D'ENTRÉPOSAGE

KEEP CONTAINERS TIGHTLY CLOSED.

STORAGE TEMPERATURE RANGE 0°C (32°F.) to 50°C (122°F.)

SPECIAL SHIPPING INFORMATION/RENSEIGNEMENTS SPÉCIAUX POUR L'EXPÉDITION

FLAMMABLE LIQUID

SECTION VIII — FIRST AID MEASURES / PREMIERS SOINS

- INHALATION** - GET TO FRESH AIR. IF BREATHING STOPPED GIVE ARTIFICIAL RESPIRATION. *
- SKIN CONTACT** - REMOVE CONTAMINATED CLOTHING. WASH WITH SOAP AND WATER. IF IRRITATION PERSISTS GET MEDICAL ATTENTION.
- EYE CONTACT** - RINSE 15 MINUTES WITH RUNNING WATER. LIFT LID. *
- INGESTION** - DO NOT INDUCE VOMITING. *
- * GET MEDICAL ATTENTION IMMEDIATELY.

ADDITIONAL INFORMATION/RENSEIGNEMENTS SUPPLEMENTAIRES

REFER TO MSDS BY MOBAY AND BAYER FOR POLYESTERS.

SECTION IX — PREPARATION DATE OF M.S.D.S. / FICHE SIGNALÉTIQUE

PREPARED BY (GROUP, DEPARTMENT, ETC.) / PRÉPARÉ PAR (GROUPE, DÉPARTEMENT, ETC.)

H. BOYD MOORE
WHMIS CO-ORDINATOR

TELEPHONE NUMBER / N° DE TÉLÉPHONE

DATE

416-746-2233

2/1/89

ADDITIONAL NOTES OR REFERENCES/NOTES ADDITIONNELLES OU RÉFÉRENCES: ACCIH (88-89)

EXPOSURE LIMITS

	TWA		STEL	
	PPM	Mg/Cu M	PPM	Mg/Cu M
Lead Chromate	N/AV	0.15 (as Pb) 0.05 (as Cr)	N/AV	N/AV
Polyester Polyols	N/AP	N/AP	N/AP	N/AP
Propylene Glycol Mono Methyl Ether Acetate	100	360	150	540
2,4 Pentanedione	N/AV	N/AV	N/AV	N/AV
2-Ethoxy Ethyl Acetate	5	27	N/AV	N/AV
Lead Sulfate	N/AV	0.15 (as Pb) 0.05 (as Cr)	N/AV	N/AV

WHMIS CLASSIFICATION:

FLAMMABILITY: CLASS B, DIVISION 2, FLAMMABLE LIQUID

HEALTH: CLASS D, DIVISION II, SUB-DIVISION B, TOXIC MATERIAL

DISCLAIMER

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER "TEMPO PAINT AND VARNISH COMPANY" MAKES NO WARRANTY, EXPRESSED OR IMPLIED, REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

/AP - NOT APPLICABLE
/AV - NOT AVAILABLE

April 15, 1987

**MATERIAL SAFETY
DATA SHEET**
IMRON® POLYURETHANE ENAMEL
Section I**Manufacturer**

E. I. du Pont de Nemours & Co. (Inc.)
 Automotive Products Department
 Wilmington, Delaware 19898
 Telephone: Product information (800) 441-7515
 Medical emergency (800) 441-3637
 Transportation emergency (800) 424-9300
 (CHEMTREC)

Product: Imron Polyurethane Enamel
 D.O.T. Hazard Class: Flammable Liquid
 Paint UN 1263

Hazardous Materials Identification System:
 H = 2, F = 3, R = 0.

**Section II — Hazardous Ingredients (See Section X for
ingredients listed by product code)**

Ingredients	CAS No.	Vapor Pressure (20°C mm Hg.)	Exposure Limits*
1. Methyl ethyl ketone	78-93-3	71	200ppm-A.O; 300ppm-A-(STEL)
2. Toluene	108-88-3	36.7	100ppm-A; 200ppm-O; 150ppm-A-(STEL); 300ppm-O-C 400ppm-A.O
3. Ethyl acetate	141-78-6	76	
4. Propylene glycol monomethyl ether acetate	108-65-6	3.8	Unknown
5. Xylene	1330-20-7	25	100ppm-A.O; 150ppm-A-(STEL)
6. VM&P naphtha	64742-89-8	15	100ppm-D; 300ppm-A; 500ppm-O
7. Chrome antimony titanate	None	None	0.5mg/m ³ -A O-Sb
8. Aluminum	7429-90-5	None	10mg/m ³ -A
9. Carbon black	1333-86-4	None	3.5mg/m ³ -A.O
10. Lead chromate molybdate	12656-85-8	None	150µg/m ³ -A; 50µg/m ³ -A; 50µg/m ³ -O-Pb; 100µg/m ³ -O-Cr
11. Lead chromate	13454-12-1	None	150µg/m ³ -A; 50µg/m ³ -A; 50µg/m ³ -O-Pb; 100µg/m ³ -O-Cr
12. Nickel, antimony, titanium yellow pigment	8007-18-9	None	0.5mg/m ³ -A. O-SB
13. Titanium dioxide	13463-67-7	None	10.0mg/m ³ -A; 15 mg/m ³ -O

14. Other pigments	None	None	10mg/m ³ -A
15. Polymeric resins	None	None	10mg/m ³ -A
16. Butyl acetate	123-86-4	8	150ppm-A.O; 200ppm-A-(STEL)
17. N-butyl alcohol	71-36-3	5.5	100ppm-O; 25ppm-D; 50ppm-C-A
18. Aromatic hydrocarbons	64742-95-6	10	25ppm-O; 50ppm-D
19. Medium mineral spirits	64742-88-7	10	100ppm-A.D; 500ppm-O

*A = ACGIH TLV, O = OSHA, D = Du Pont internal limit,
 S = Supplier Furnished Limit, STEL = Short Term Exposure Limit
 (15 min.), C = Ceiling

Section III — Physical Data

Evaporation rate: Slower than ether
 Solubility in water: Miscible
 Vapor Density: Heavier than air
 Boiling Range: 76°F-155°F
 Gal. Wt. (#/gal): 8.25-11.19
 Volume % Volatile: 60.6-69.4%
 Weight % Volatile: 42.8-63.6%
 V.O.C. (#/gal): 3.5-6.0

Section IV — Fire & Explosion Data

Flash point (Closed cup): 73-100°F
 Approx. flammable limits: 1.0-13.1%
 Extinguishing media: Water spray, foam, carbon dioxide, dry chemical
 Special fire fighting procedures: Full protective equipment, including self-contained breathing apparatus, is recommended. Water from fog nozzles may be used to cool closed containers to prevent pressure build up.
 Unusual fire & explosion hazards: When heated above the flash point, emits flammable vapors which, when mixed with air, can burn or be explosive. Fine mists or sprays may be flammable at temperatures below the flash point.

Section V — Health Hazard Data**General effects**

Ingestion: Gastro-intestinal distress.
 In the unlikely event of ingestion, call a physician immediately and have names of ingredients available.
 Inhalation: May cause nose and throat irritation. Repeated and prolonged overexposure to solvents may lead to permanent brain and nervous system damage. Eye watering, headaches, nausea, dizziness and loss of coordination are signs that solvent levels are too high. This product cannot be applied satisfactorily without the addition of an activator which contains an isocyanate. Exposure to the isocyanate may cause asthma-like reactions with shortness of breath, wheezing, cough or lung sensitization. This effect may be delayed for several hours after exposure. Individuals with lung or breathing problems or prior reaction to isocyanates must not be exposed to the vapors or spray mist.
 If affected by inhalation of vapor or spray mist, remove to fresh air. If breathing difficulty persists, or occurs later, consult a physician.
 Skin or eye contact: May cause irritation or burning of the eyes. Repeated or prolonged liquid contact may cause skin irritation with discomfort and dermatitis.
 In case of eye contact, immediately flush with plenty of water for at least 15 minutes; call a physician.

Section V — Health Hazard Data — Continued

In case of skin contact, wash with soap and water. If irritation occurs, contact a physician.

Specific effects

Methyl Ethyl Ketone: High concentrations have caused embryotoxic effects in laboratory animals. Methyl Ethyl Ketone (MEK) has been demonstrated to potentiate (i.e., shorten the time of onset) the peripheral neuropathy caused by either N-Hexane or Methyl N-Butyl Ketone. MEK by itself has not been demonstrated to cause peripheral neuropathy. Liquid splashes in the eye may result in chemical burns. **Toluene:** Recurrent overexposure may result in liver and kidney injury. High airborne levels have produced irregular heart beats in animals and occasional palpitations in humans. Rats exposed to very high airborne levels have exhibited high frequency hearing deficits. The significance of this to man is unknown. **Ethyl Acetate:** Prolonged and repeated high exposures of laboratory animals resulted in secondary anemia with an increase in white blood cells; fatty degeneration, cloudy swelling and an excess of blood in various organs. **Propylene Glycol Monomethyl Ether Acetate:** May cause moderate eye burning. Recurrent overexposure may result in liver and kidney injury. **Xylene:** high concentrations have caused embryotoxic effects in laboratory animals. Recurrent overexposure may result in liver and kidney injury. Can be absorbed through the skin in harmful amounts. **VM&P Naphtha and Medium Mineral Spirits:** Laboratory studies with rats have shown that petroleum distillates cause kidney damage and kidney or liver tumors. These effects were not seen in similar studies with guinea pigs, dogs, or monkeys. Several studies evaluating petroleum workers have not shown significant increases of kidney damage nor kidney or liver tumors. **Chrome Antimony Titanate, Nickel, Antimony, Titanium Yellow Pigment:** Antimony, nickel and chromium are incorporated into the crystal structure of titanium dioxide. As such they are chemically and biologically inert. **Lead Chromate Molybdate, Lead Chromate and Lead:** Overexposure to lead may cause adverse effects to the blood forming, nervous, urinary, reproductive systems including embryotoxic effects. Symptoms may include loss of appetite, anemia, disturbance of sleep and fatigue. See OSHA Lead Standard 29CFR1910.1025 for exposures longer than 8 hours. The OSHA exposure limit is reduced by this formula: $\text{Limit (in } \mu\text{g/m}^3) = 400/\text{hours worked in the day}$. These pigments are NTP carcinogens. Lead can be absorbed through the skin in harmful amounts. **Titanium Dioxide:** In a lifetime inhalation test, lung cancers were found in some rats exposed to 250 mg/m³ respirable titanium dust. Analysis of the titanium dioxide concentrations in the rats' lungs showed that the lung clearance mechanism was overwhelmed and that the results at the massive 250 mg/m³ level are not relevant to the workplace. **Butyl Acetate:** Extremely high concentrations have caused blood changes and weakness in laboratory animals. **N-Butyl Alcohol:** Liquid splashes in the eye may result in chemical burns.

Section VI — Reactivity Data

Stability: stable

Incompatibility (materials to avoid): none reasonably foreseeable

Hazardous decomposition products: CO, CO₂, smoke, oxides of heavy metals reported in Section II

Hazardous polymerization: will not occur

Section VII — Spill or Leak Procedures

Steps to be taken in case material is released or spilled: Ventilate area. Remove sources of ignition. Prevent skin contact and breathing of vapor. Wear a properly fitted vapor/particulate respirator (NIOSH/MSHA TC-23C). If the material has been activated with an isocyanate, wear a positive pressure supplied

air respirator (NIOSH/MSHA TC-19C).

Confine and remove with inert absorbent.

Deactivate isocyanate containing spills with:

20% Surfactant (Tergitol TMN-10)

80% Water

or

0-10% Ammonia

2-5% Detergent

Balance Water

Water disposal method: Do not allow material to contaminate ground water systems. Incinerate absorbed material in accordance with federal, state, and local requirements. Do not incinerate in closed containers.

Section VIII — Special Protection Information

Respiratory: Do not breathe vapors or mists.

Wear a positive pressure, supplied-air respirator (NIOSH/MSHA TC-19C) while mixing activator with enamel, during application and until all vapors and spray mists are exhausted. Individuals with a history of lung or breathing problems or prior reaction to isocyanate should not use or be exposed to this product when activated. Do not permit anyone without protection in the painting area. Follow the respirator manufacturer's directions for respirator use.

Ventilation: Provide sufficient ventilation in volume and pattern to keep contaminants below applicable OSHA requirements.

Protective clothing: Neoprene gloves and coveralls are recommended.

Eye protection: Desirable in all industrial situations. Include splash guards or side shields.

Section IX — Special Precautions

Precautions to be taken in handling and storage: Observe label precautions. Keep away from heat, sparks and flame. Close container after each use. Ground containers when pouring. Wash thoroughly after handling and before eating or smoking. Do not store above 120°F.

Other precautions: Do not sand, flame cut, braze or weld dry coating without a NIOSH/MSHA approved respirator or appropriate ventilation.

Section X — Hazardous Ingredients by Product Code

Product Code	Ingredients (See Section II)
520U, 521U, 522U, 523U	4, 8, 15, 16, 17, 18, 19
532U	2, 3, 4, 5, 9, 12, 13, 14, 15
533U	2, 3, 4, 5, 9, 13, 14, 15
534U, 539U, 540U, 541U, 543U, 544U, 555U	2, 3, 4, 5, 13, 14, 15
531U, 535U	2, 3, 4, 5, 9, 15
536U, 553U, 554U, 556U, 557U, 559U, 561U, 562U, 566U, 567U	2, 3, 4, 5, 9, 14, 15
537U	2, 3, 4, 5, 7, 13, 14, 15
547U	2, 3, 4, 5, 9, 10, 15
548U	2, 3, 4, 5, 9, 10, 11, 13, 14, 15
550U	2, 3, 4, 5, 6, 8, 15
552U, 558U	2, 3, 4, 5, 14, 15
560U	2, 3, 4, 5, 9, 10, 11, 15
563U, 564U	1, 2, 3, 4, 5, 6, 14, 15
565U	2, 3, 4, 5, 6, 9, 14, 15
571U, 572U	2, 3, 4, 6, 15

Notice: The data in this material safety data sheet relate only to the specific material designated herein and do not relate to use in combination with any other material or in any process.

Product Manager
Refinish Sales



MATERIAL SAFETY DATA SHEET



April 15, 1987

ISOCYANATE ACTIVATORS, HARDENERS AND ADDITIVES

Section I

Manufacturer

E. I. du Pont de Nemours & Co. (Inc.)
Automotive Products Department
Wilmington, Delaware 19898
Telephone: Product information (800) 441-7515
Medical emergency (800) 441-3637
Transportation emergency (800) 424-9300
(CHEMTREC)

Product: 77S, 192S, 195S, 355S, 582S, 782S, 792S, 793S,
VG-Y-1421

D.O.T. Hazard Class: Flammable Liquid
Driers, paint, liquid N.O.S. UN 1168

Hazardous Materials Identification System:
H = 3, F = 3, R = 1.

Section II — Hazardous Ingredients (See Section X for ingredients listed by product code)

Ingredients	CAS Number	Vapor Pressure (20°C mm Hg.)	Exposure Limits*
1. Butyl acetate	123-86-4	8	150ppm-A, O; 200ppm-A-(STEL)
2. Toluene	108-88-3	36.7	100ppm-A; 200ppm-O; 150ppm-A-(STEL); 300ppm-O-C
3. Diethylene glycol monobutyl ether	112-34-5	0.1	5.0ppm-D
4. Trixylenyl phosphate	25155-23-1	1	Unknown
5. Ethyl acetate	141-78-6	76	400ppm-A, O
6. Aromatic hy- drocarbons	64742-95-6	10	25ppm-O; 50ppm-D
7. Light stabilizer	None	Unknown	0.1mg/m ³ -S
8. 1,6 Hexa- methylene diisocyanate	822-06-0	Unknown	5.0 ppb-A, D; 20 ppb-C, S
9. Aliphatic polyiso- cyanate	28182-81-2	None	1.0mg/m ³ -S
10. Polymeric isophorone diisocyanate	None	None	..

*A=ACGIH TLV, O=OSHA, D=Du Pont internal limit,
S=Supplier Furnished Limit, STEL=Short Term Exposure
Limit (15 mins.), C=Ceiling

**Free Isophorone Diisocyanate monomer is less than 0.7% by
weight. Exposure limits are 0.01 ppm-A for the monomer.

Section III — Physical Data

Evaporation rate: Slower than ether Gal. wt. (#/gal): 8.07-9.10
Solubility in water: Miscible Volume % volatile: 25.9-71.6%
Vapor density: Heavier than air Weight % volatile: 21.2-66.0%
Boiling range: 76-472°F V.O.C. (#/gal): 1.7-5.5

Section IV — Fire & Explosion Data

Flash point (Closed cup): 73-100°F
Approx. flammable limits: 0.9-11.2%

Extinguishing media: Water spray, foam, carbon dioxide, dry
chemical

Special fire fighting procedures: Full protective equipment, including
self-contained breathing apparatus, is recommended. Water
from fog nozzles may be used to cool closed containers to
prevent pressure build up.

Unusual fire & explosion hazards: When heated above the flash
point, emits flammable vapors which, when mixed with air, can
burn or be explosive. Fine mists or sprays may be flammable at
temperatures below the flash point.

Section V — Health Hazard Data

General effects

Ingestion: Gastro-intestinal distress.

In the unlikely event of ingestion, call a physician immediately
and have names of ingredients available.

Inhalation: May cause nose and throat irritation. Repeated and
prolonged overexposure to solvents may lead to permanent
brain and nervous system damage. Eye watering,
headaches, nausea, dizziness and loss of coordination are
signs that solvent levels are too high. Exposure to
isocyanates may cause asthma-like reactions with shortness
of breath, wheezing, cough or lung sensitization. This effect
may be delayed for several hours after exposure. Individuals
with lung or breathing problems or prior reaction to
isocyanates must not be exposed to vapors or spray mist of
this product.

If affected by inhalation of vapor or spray mist, remove to
fresh air. If breathing difficulty persists, or occurs later, consult
a physician.

Skin or eye contact: May cause irritation or burning of the eyes.
Repeated or prolonged liquid contact may cause skin
irritation with discomfort and dermatitis.

In case of eye contact, immediately flush with plenty of water
for at least 15 minutes; call a physician.

In case of skin contact, wash with soap and water. If irritation
occurs, contact a physician.

Specific effects

Butyl Acetate: Extremely high concentrations have caused blood
changes and weakness in laboratory animals. Toluene:
Recurrent overexposure may result in liver and kidney injury.
High airborne levels have produced irregular heart beats in
animals and occasional palpitations in humans. Rats exposed to
very high airborne levels have exhibited high frequency hearing
deficits. The significance of this to man is unknown. Diethylene
Glycol Monobutyl Ether: Contact may cause skin irritation with
discomfort or rash. Extremely high concentrations have caused
embryotoxic effects in laboratory animals. May cause abnormal
kidney function. High doses in laboratory animals have shown
non-specific effects such as irritation, weight loss, moderate
blood changes. Tests for mutagenic activity in bacterial or
mammalian cell cultures have been inconclusive. Trixylenyl
Phosphate: Has produced delayed neurotoxicity via oral and
dermal routes in studies on the hen. Ethyl Acetate: Prolonged
and repeated high exposures of laboratory animals resulted in
secondary anemia with an increase in white blood cells; fatty
degeneration, cloudy swelling and an excess of blood in various
organs. Light Stabilizer: Causes severe eye irritation. Contact
may cause skin irritation with discomfort or rash.
1,6 Hexamethylene Diisocyanate: May cause temporary upper
respiratory and/or lung irritation with cough, difficulty breathing,
shortness of breath. Overexposure may cause asthma-like

Section V — Health Hazard Data — Continued

reactions with shortness of breath, wheezing, cough or permanent lung sensitization. This effect may be delayed for several hours after exposure. Prolonged skin contact may cause chemical burns. Liquid splashes in the eye may result in chemical burns. Individuals with preexisting lung disease, asthma or breathing difficulties may have increased susceptibility to the toxicity of excessive exposures. Aliphatic Polyisocyanate or Polymeric Isophorone Diisocyanate: Repeated exposure may cause allergic skin rash, itching, swelling. Overexposure may cause asthma-like reactions with shortness of breath, wheezing, cough or permanent lung sensitization. This effect may be delayed for several hours after exposure. Individuals with preexisting lung disease, asthma, or breathing difficulties may have increased susceptibility to the toxicity of excessive exposures.

Section VI — Reactivity Data

Stability: Stable

Incompatibility (materials to avoid): none reasonably foreseeable

Hazardous decomposition products: CO, CO₂, smoke

Hazardous polymerization: will not occur

Section VII — Spill or Leak Procedures

Steps to be taken in case material is released or spilled: Do not breathe vapors. Do not get in eyes or on skin. Wear a positive pressure supplied air vapor/particulate respirator (NIOSH/MSHA TC-19C), eye protection, gloves and protective clothing. Remove sources of ignition. Absorb with inert material. Ventilate area. Pour liquid decontaminate solution over the spill and allow to sit 10 minutes, minimum. Typical decontamination solutions are:

20% Surfactant (Tergitol TMN 10)

80% Water

or

0-10% Ammonia

2-5% Detergent

Balance water

Waste disposal method: Do not allow material to contaminate ground water systems. Incinerate absorbed material in accordance with federal, state, and local requirements. Do not

incinerate in closed containers.

Section VIII — Special Protection Information

Respiratory: Do not breathe vapors or mists.

Wear a positive pressure supplied air respirator (NIOSH/MSHA TC-19C) while mixing activator with any paint or clear enamel, during application and until all vapors and spray mists are exhausted. Individuals with a history of lung or breathing problems or prior reaction to isocyanate should not use or be exposed to this product. Do not permit anyone without protection in the painting area. Follow the respirator manufacturer's directions for respirator use.

Ventilation: Provide sufficient ventilation in volume and pattern to keep contaminants below applicable OSHA requirements.

Protective clothing: Neoprene gloves and coveralls are recommended.

Eye protection: Desirable in all industrial situations. Include splash guards or side shields.

Section IX — Special Precautions

Precautions to be taken in handling and storing: Observe label precautions. Keep away from heat, sparks and flame. Close container after each use. Ground containers when pouring. Wash thoroughly after handling and before eating or smoking. Do not store above 120°F.

Other precautions: Do not sand, flame cut, braze or weld dry coating without a NIOSH/MSHA approved respirator or appropriate ventilation.

Section X — Hazardous Ingredients by Product Code

Product Code	Ingredients (See Section II)
192S, 195S, 582S, 782S	1, 5, 6, 8, 9
355S	1, 2, 3, 5, 6, 7, 8, 9
793S	1, 2, 3, 4, 5, 6, 7, 8, 9
VG-Y-1421	1, 6, 8, 9
77S	1, 2, 6, 10
2000S — Part B	1, 2, 6, 8, 9

Notice: The data in this material safety data sheet relate only to the specific material designated herein and do not relate to use in combination with any other material or in any process.

Product Manager
Refinish Sales